Research on the Profitability of Hainan Airlines Based on DuPont Analysis Theory

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ABSTRACT

This study focused on the profitability of air transport enterprises, constructing an analytical framework based on DuPont Analysis Theory to systematically explore the key factors influencing the profitability of Hainan Airlines and their mechanisms. By reviewing relevant domestic and international literature, this study systematically examined existing research on corporate profitability and the application of DuPont Analysis Theory. Building on this foundation, net profit margin, total asset turnover, and equity multiplier were selected as core explanatory variables to conduct an in-depth analysis of the formation mechanism of corporate profitability.

Based on the DuPont Analysis Theory, this study decomposed the formation mechanism of return on equity into three core factors: net profit margin, total asset turnover, and equity multiplier. An analytical framework was constructed accordingly to explore the key factors influencing the profitability of Hainan Airlines. The main objectives of this study were threefold: 1. To examine the relationship between net profit margin and the profitability of Hainan Airlines; 2. To examine the relationship between total asset turnover and the profitability of Hainan Airlines; 3. To examine the relationship between equity multiplier and the profitability of Hainan Airlines. Through a systematic analysis of these variables, this study aimed to reveal the internal mechanism of profitability formation in aviation enterprises and provide a theoretical basis for corporate decision-making.

In terms of research methodology, this study adopted a quantitative research approach and collected data through a questionnaire survey. A total of 400 questionnaires were distributed. After excluding incomplete responses or those with obvious logical inconsistencies, 378 valid questionnaires were obtained, resulting in an effective response rate of 94.5%. In the data analysis stage, descriptive statistical analysis, correlation analysis, and multiple regression analysis were employed to empirically test the relationships between net profit margin, total asset turnover, equity multiplier, and

corporate profitability, thereby ensuring the scientific validity and reliability of the research findings.

The empirical results indicate that net profit margin, total asset turnover, and equity multiplier all have a significant positive impact on the profitability of Hainan Airlines. Among them, net profit margin has the most significant influence on corporate profitability, indicating that profit quality plays a central role in the formation of airline profitability. Total asset turnover also exerts an important influence on profitability, suggesting that improving asset utilization efficiency can enhance overall corporate profitability. The equity multiplier likewise shows a significant positive effect on profitability, indicating that the appropriate use of financial leverage can, to a certain extent, strengthen a firm's earning capacity. Based on these findings, this study proposes that aviation enterprises should improve profit quality, enhance asset allocation efficiency, and make reasonable use of financial leverage in order to optimize operational management and strengthen the stability and sustainability of corporate profitability.

Keywords: DuPont Analysis Theory, return on equity, total asset turnover, equity multiplier, net profit margin

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YUSHUIQING

DECLARATION

I, YUSHUIQING, hereby certify that the work embodied in this independent study entitled *" Research on the Profitability of Hainan Airlines Based on DuPont Analysis Theory"* is result of original research and has not been submitted for a higher degree to any other university or institution.

(YUSHUIQING)
December 19, 2025

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Chapter 1 Introduction

1.1 Research Background

The air transport industry is a vital component of the national economic system, characterized by typical features such as capital intensity, large asset scale, high operating costs, and distinct cyclicality. Its development status not only directly affects the completeness of the transportation system but also has profound impacts on regional economic development, international trade, and population mobility. In recent years, with the deepening of economic globalization and sustained growth in resident travel demand, China's civil aviation transport industry has generally maintained an expansion trend, yet it simultaneously faces more complex and volatile external environments and operational pressures.

On one hand, although air transport demand has gradually recovered in the post-pandemic era, the recovery process exhibits significant unevenness and uncertainty. The recovery pace of international routes lags, domestic market competition intensifies, passenger structure changes, and the proportion of price-sensitive demand increases, compressing airlines' profit margins. On the other hand, persistently fluctuating international oil prices, periodic depreciation of the RMB, continuous improvement of the high-speed rail network, and increasingly stringent industry regulations all exert continuous shocks on airlines' cost control and profitability.

Hainan Airlines Holding Co., Ltd. (hereinafter referred to as "Hainan Airlines"), as one of China's important air transport enterprises, once possessed certain competitive advantages in route network layout, service quality, and brand image. However, affected by industry cyclical fluctuations and its own high-leverage expansion strategy, Hainan Airlines faced significant financial pressure over a long period and underwent bankruptcy restructuring and debt reorganization. Although operational order gradually recovered post-restructuring, its profitability still exhibits characteristics of strong volatility and insufficient stability. Particularly during the period 2022-2024, Hainan Airlines' return on equity (ROE) experienced significant fluctuations, making issues of profit quality and sustainability increasingly prominent.

Against this backdrop, how to systematically and scientifically analyze the formation mechanism of Hainan Airlines' profitability and identify the key factors affecting its profit level has become an important topic with practical significance and research value. DuPont Analysis Theory, as a classic financial analysis tool, provides an in-depth dissection of a company's overall profitability from three dimensions—profitability, asset operational efficiency, and financial leverage level — by decomposing ROE into three core indicators: net profit margin, total asset turnover, and equity multiplier. Therefore, conducting systematic research on Hainan Airlines' profitability based on DuPont Analysis Theory possesses strong theoretical

applicability and practical value.

1.2 Research Questions

Focusing on Hainan Airlines' recent financial data, this study examined the quantitative relationships and directional influences of various factors on profitability. The research questions are as follows:

(1) What is the relationship between net profit margin and the profitability of Hainan Airlines?

(2) What is the relationship between total asset turnover and the profitability of Hainan Airlines?

(3) What is the relationship between equity multiplier and the profitability of Hainan Airlines?

1.3 Research Objectives

Although existing research has yielded relatively rich results on corporate profitability analysis and the application of DuPont Analysis Theory, empirical studies focusing on the air transport industry, especially those combining DuPont analysis with questionnaire survey method, remain relatively insufficient. Given that aviation enterprises generally possess characteristics such as high capital intensity, significant operational risks, and complex financial structures, relying solely on financial statement data makes it difficult to fully reveal the formation mechanism of their profitability. Therefore, it is necessary to incorporate perception data from management and related practitioners, on the basis of financial indicator analysis, to conduct a multi-dimensional analysis of profitability influencing factors.

This study took Hainan Airlines as the research object and, under the framework of DuPont Analysis Theory, conducted a systematic analysis of its profitability and influencing factors using comprehensive quantitative research methods.

Through DuPont decomposition analysis of Hainan Airlines financial data in recent years, combined with quantitative analysis based on questionnaire surveys, this study aimed to:

(1) To examine the relationship between net profit margin and the profitability of Hainan Airlines.

(2) To examine the relationship between total asset turnover and the profitability of Hainan Airlines.

(3) To examine the relationship between equity multiplier and the profitability of Hainan Airlines.

1.4 Research Scope

This study took Hainan Airlines as the research subject, conducting an in-depth exploration of its profitability and influencing factors. At the theoretical level, it systematically reviewed research results related to corporate profitability analysis, DuPont Analysis Theory, and financial performance of air transport enterprises, laying a theoretical foundation for this research.

Regarding data collection, this study employed a combined approach of financial data analysis and questionnaire surveys. To ensure the reliability and validity of the research results, the reasonableness of the questionnaire sample size must be guaranteed. Based on statistical formulas for sample size calculation, under the conditions of a 95% confidence level and a 5% margin of error, and combined with pre-assessment results of Hainan Airlines' employee scale and position structure, it was determined that approximately 400 valid questionnaires could meet the requirements of this study for data representativeness.

In terms of research variables, this study, based on DuPont Analysis Theory and taking return on equity as the core analytical indicator, focused on analyzing the impacts of three major factors — net profit margin, total asset turnover, and equity multiplier—on Hainan Airlines' profitability. By constructing a quantitative analytical framework for profitability influencing factors and employing quantitative research methods and 400 questionnaires were distributed and collected to empirically test the research hypotheses and analytical framework.

Regarding the application of research results, based on the empirical analysis results, this study proposes targeted improvement suggestions for Hainan Airlines, including enhancing profitability levels, optimizing asset operational efficiency, and reasonably controlling financial leverage, to strengthen the company's profitability and financial management level.

1.5 Research Significance

1.5.1 Theoretical Significance

From a theoretical perspective, this study systematically studied the profitability of Hainan Airlines and its influencing factors based on DuPont Analysis Theory, enriching the application research of corporate profitability analysis within the air transport industry. Existing research mostly focuses on manufacturing or financial industries, with relatively insufficient analysis of profitability in the capital-intensive,

strongly cyclical air transport industry. Taking an aviation enterprise as the research subject, this study structurally decomposes profitability within the DuPont analytical framework, contributing to a deeper understanding of the formation mechanism of aviation enterprise profitability.

Furthermore, on the basis of traditional financial indicator analysis, this study introduced a questionnaire survey method, combining financial data analysis with perception data from management and related practitioners, to empirically test profitability influencing factors from multiple dimensions. This, to some extent, expands the research perspective of DuPont Analysis Theory, providing new ideas and references for subsequent related research.

1.5.2 Practical Significance

From a practical perspective, through empirical analysis of Hainan Airlines' profitability and its influencing factors, this study helps enterprise management more comprehensively understand the composition of their own profitability and the reasons for its changes, providing a basis for operational decision-making and financial management. The research results can assist enterprises in identifying key factors affecting profitability, clarifying the directions that should receive focused attention in the process of improving profitability, thereby enabling targeted optimization of operational strategies and financial management measures.

Simultaneously, the relevant analytical approaches and research conclusions proposed in this study also hold certain reference significance for other air transport enterprises. Especially against the backdrop of intensified industry competition, rising cost pressures, and increased uncertainty in the operating environment, this research assists aviation enterprises in reasonably enhancing profitability levels, optimizing asset operational efficiency, and controlling financial leverage risks, thereby promoting the steady operation and sustainable development of enterprises.

1.6 Definition of Key Terms

To ensure the accuracy and consistency of the research content expression, the key terms involved in this study are defined as follows:

(1) Profitability

Profitability refers to an enterprise's ability to generate profits through its operating activities within a certain period, reflecting the comprehensive effects of its resource allocation and operational management. This study primarily measures and analyzes the profitability of Hainan Airlines through return on equity (ROE) and its component indicators.

(2) Return on Equity (ROE)

Return on equity refers to the ratio of net profit achieved by an enterprise within a certain period to its average net assets. It is used to measure the enterprise's ability to generate returns using its own capital and is an important indicator for evaluating the overall profit level of an enterprise.

(3) Net Profit Margin

Net profit margin refers to the ratio of an enterprise's net profit to its operating revenue, reflecting the ability to convert sales revenue into profit. It is one of the important indicators for measuring an enterprise's profit quality.

(4) Total Asset Turnover

Total asset turnover refers to the ratio of an enterprise's operating revenue to its average total assets. It is used to measure the utilization efficiency of an enterprise's assets, reflecting the enterprise's ability to generate revenue through asset investment.

(5) Equity Multiplier

Equity multiplier refers to the ratio of an enterprise's total assets to its net assets, reflecting the level of financial leverage and embodying the enterprise's reliance on debt financing in its operations.

Chapter 2 Literature Review

2.1 Introduction

In the field of corporate financial management research, profitability is one of the important indicators for measuring a company's operating status and financial performance. Profitability can not only reflect an enterprise's ability to generate profits but also reflect its resource allocation efficiency and potential for long-term development. Therefore, profitability has always been an important research topic for scholars both domestically and internationally. By systematically analyzing corporate profitability, one can better understand business operational efficiency and its influencing factors, thereby providing an important basis for corporate operational decision-making.

Among the numerous financial analysis methods, DuPont Analysis is considered one of the most classic methods for analyzing corporate profitability. This method was first proposed by the DuPont Corporation in the United States in the early 20th century. It analyzes the formation mechanism of corporate profitability by decomposing Return on Equity (ROE). The DuPont Analysis model can decompose corporate profitability into three core indicators: net profit margin, total asset turnover, and equity multiplier, comprehensively evaluating the company's operating status from the aspects of profitability, asset operational efficiency, and financial leverage (Soliman, 2008).

With the development of financial management theory, more and more scholars have applied the DuPont Analysis method to the study of corporate profitability. For example, Penman (2013), in his research on financial statement analysis, pointed out that through DuPont analysis, one can gain a deeper understanding of the sources of corporate profitability and reveal the relationship between business operational efficiency and financial structure. Furthermore, domestic scholars have also widely used the DuPont analysis method to study the profitability of listed companies. For instance, Zhang (2020) believed that DuPont analysis can not only reveal the reasons for changes in corporate profitability but also provide important decision-making basis for business management.

In research related to the air transport industry, due to the characteristics of aviation enterprises such as large asset scale, high capital intensity, and relatively high operating costs, their profitability is often affected by multiple factors. Wang (2020) when studying the operational performance of Chinese airlines, pointed out that the profitability of aviation enterprises is mainly influenced by factors such as cost control capability, asset operational efficiency, and capital structure. Therefore, using the DuPont analysis method to study the profitability of aviation enterprises can provide a more comprehensive analysis of their operational status.

Hainan Airlines, as one of China's important air transport enterprises, has a significant influence in the domestic air transport market. However, in recent years, the aviation industry has been affected by factors such as economic cycles, oil price fluctuations, and the pandemic, leading to significant fluctuations in the profitability of aviation enterprises. Liu (2019), when studying the operational performance of Chinese airlines, pointed out that changes in the profitability of aviation enterprises are not only related to market demand but also closely linked to their cost control capabilities and operational efficiency.

Therefore, when studying the profitability of Hainan Airlines, it is necessary to conduct a systematic analysis starting from key indicators including net profit margin, total asset turnover, and equity multiplier. Based on this, this chapter systematically reviews relevant domestic and international literature, focusing on analyzing research results concerning net profit margin, total asset turnover, equity multiplier, and corporate profitability, thereby providing a theoretical foundation for subsequent research.

2.2 DuPont Analysis Theory

DuPont Analysis is a classical financial analysis method originally developed by the DuPont Corporation. It provides a systematic approach to evaluating corporate profitability by decomposing ROE into three components: net profit margin, total asset turnover, and equity multiplier. These components respectively reflect a firm's profitability, asset utilization efficiency, and financial leverage.

Through this decomposition, DuPont Analysis reveals the underlying mechanism of profitability formation by integrating profitability, operational efficiency, and capital structure into a unified analytical framework. As noted by Soliman (2008), this approach facilitates the identification of key drivers of corporate financial performance.

In capital-intensive industries, including air transportation, firms are typically characterized by large asset bases, high cost rigidity, and significant reliance on financial leverage. Therefore, relying solely on aggregate financial indicators may not adequately capture the complexity of profitability. The application of DuPont Analysis enables a comprehensive examination of the interactions among profit generation, asset efficiency, and financial leverage, thereby providing a more robust evaluation of corporate profitability.

Accordingly, this study adopted DuPont Analysis as its theoretical foundation. Return on equity (ROE) was employed as the key indicator of profitability, while net profit margin, total asset turnover, and equity multiplier were selected as the main explanatory variables to analyze the profitability of Hainan Airlines.

2.3 Net Profit Margin

2.3.1 Concept and Calculation Method of Net Profit Margin

Net Profit Margin is one of the important indicators for measuring corporate profitability, primarily reflecting an enterprise's ability to convert operating revenue into net profit within a certain period. Brigham and Houston (2018), in "Fundamentals of Financial Management," pointed out that net profit margin can reflect the level of net profit an enterprise obtains based on its sales revenue and is one of the important indicators for measuring corporate profitability.

Net profit margin is typically calculated using the following formula:
Net Profit Margin = Net Profit ÷ Operating Revenue × 100%

Ross et al. (2016) believed that net profit margin can not only reflect an enterprise's profitability but also embody its efficiency in cost control and expense management. If an enterprise can effectively control production costs and operating expenses, its net profit margin tends to increase.

In the DuPont analysis system, net profit margin is an important factor affecting return on equity. Soliman (2008), when researching the DuPont analysis model, pointed out that net profit margin reflects corporate profitability and is a crucial component of the DuPont analysis system. By increasing net profit margin, an enterprise can achieve profit growth while maintaining stable revenue growth.

For air transport enterprises, net profit margin is often affected by factors such as fuel costs, operating costs, and changes in market demand. Doganis (2010), when researching the operational performance of airlines, pointed out that fuel costs account for a relatively high proportion of airline operating costs; therefore, fluctuations in fuel prices directly affect airline profitability. Furthermore, route network layout and changes in load factors also significantly impact the revenue levels of aviation enterprises, thereby affecting net profit margin.

Therefore, in research on the profitability of aviation enterprises, net profit margin is often regarded as an important indicator for measuring corporate profitability.

2.3.2 Domestic Research Related to Net Profit Margin

In domestic research, many scholars have conducted in-depth studies on the relationship between corporate net profit margin and profitability. Liu (2019), when researching the profitability of Chinese listed companies, pointed out that net profit margin can directly reflect business operating results and is one of the important

indicators for measuring corporate profitability. By improving cost control capabilities and operational efficiency, enterprises can effectively enhance their net profit margin.

Wang (2020), through empirical analysis of financial data from Chinese manufacturing listed companies, found a significant positive correlation between net profit margin and corporate profitability. The research shows that when a company's net profit margin increases, its return on equity also increases correspondingly, thereby enhancing corporate profitability.

In research related to the air transport industry, Zhao et al. (2023), through analyzing the financial data of China's three major airlines, found that the net profit margins of aviation enterprises fluctuate significantly, mainly influenced by fuel prices and changes in market demand. The research points out that when aviation enterprises can optimize route structures and improve load factors, their operating revenue grows, thereby promoting an increase in net profit margin.

Furthermore, Liu (2019), when researching airline operational performance, pointed out that aviation enterprises taking effective measures in strengthening cost control and improving operational efficiency can, to a certain extent, increase net profit margin, thereby enhancing corporate profitability.

Overall, domestic scholars generally believe that net profit margin is an important factor affecting corporate profitability. By analyzing trends in net profit margin changes, one can gain a more comprehensive understanding of a company's operational status.

2.3.3 International Research Related to Net Profit Margin

In international research, many scholars use net profit margin as an important indicator for measuring corporate profitability. Fama and French (2015), when researching corporate financial performance, pointed out that net profit margin can reflect business operational efficiency and is one of the important indicators for evaluating corporate profitability.

Penman (2013), in "Financial Statement Analysis and Security Valuation," pointed out that the improvement of corporate profitability is often closely related to an increase in net profit margin. If an enterprise can effectively control cost expenditures while revenue grows, its net profit margin will significantly increase.

In research related to the air transport industry, Doganis (2010), in "Flying Off Course: Airline Economics and Marketing," pointed out that airline profitability is closely related to operational efficiency. The research found that when airlines can improve load factors and optimize route structures, their operating revenue levels

increase, thereby promoting net profit margin growth.

Furthermore, Gillen and Lall (2016), when researching the operational performance of global airlines, pointed out that airlines taking effective measures to improve operational efficiency and strengthen cost control can effectively increase corporate net profit margin, thereby enhancing overall corporate profitability.

In summary, international scholars generally believe that net profit margin is an important indicator for measuring corporate profitability. By analyzing changes in net profit margin, one can better understand business operational efficiency and changes in profitability.

2.4 Total Asset Turnover

2.4.1 Concept and Calculation Method of Total Asset Turnover

Total Asset Turnover is an important indicator for measuring an enterprise's asset utilization efficiency. Brigham and Houston (2018) pointed out that total asset turnover can reflect an enterprise's ability to use assets to generate revenue and is an important indicator for evaluating business operational efficiency.

Total asset turnover is typically calculated using the following formula:
Total Asset Turnover = Operating Revenue ÷ Average Total Assets

Ross et al. (2016) believed that if an enterprise can use fewer assets to generate more revenue, its asset utilization efficiency is high, thus manifesting as a higher total asset turnover.

In the DuPont analysis system, total asset turnover is one of the important factors affecting return on equity. Soliman (2008) pointed out that total asset turnover reflects an enterprise's asset operational efficiency. When asset utilization efficiency increases, the enterprise's profitability also improves accordingly.

For air transport enterprises, due to the need for substantial investment in fixed assets such as aircraft, terminal facilities, and operational equipment, asset scale is typically large. Doganis (2010) pointed out that if aviation enterprises can improve asset utilization efficiency through reasonable route planning and increased aircraft utilization rates, they can increase total asset turnover.

2.4.2 Domestic Research Related to Total Asset Turnover

In domestic research, many scholars have studied total asset turnover from the perspective of enterprise operational efficiency.Zhang (2020), when researching the

financial performance of listed companies, pointed out that total asset turnover can reflect an enterprise's asset operational efficiency and is an important indicator for evaluating business operational capability. When enterprise asset utilization efficiency increases, its profitability will also strengthen accordingly.

Liu (2019), through research on the financial data of Chinese listed companies, found a significant positive correlation between total asset turnover and corporate profitability. The research results indicate that when enterprises can improve asset utilization efficiency, their operating revenue growth rate typically outpaces asset scale growth, thereby promoting an increase in corporate profitability.

Wang (2020), when researching the financial performance of manufacturing listed companies, pointed out that total asset turnover is one of the important indicators for measuring enterprise operational efficiency. The research found that the higher the total asset turnover, the higher the enterprise's asset utilization efficiency, and the relatively stronger its profitability.

In research related to the air transport industry, Zhao et al. (2023), through analyzing the financial data of Chinese airlines, found that aviation enterprises have a large asset scale, therefore asset utilization efficiency has an important impact on corporate profitability. Research shows that when aviation enterprises can improve aircraft utilization rates and optimize route structures, their operating revenue levels will significantly increase, thereby promoting an improvement in total asset turnover.

Furthermore, Liu (2019), when researching the operational performance of aviation enterprises, pointed out that aviation enterprises taking effective measures in improving operational efficiency and optimizing resource allocation can, to a certain extent, increase asset utilization efficiency, thereby increasing corporate total asset turnover.

Overall, domestic scholars generally believe that total asset turnover is one of the important factors affecting corporate profitability. By improving asset operational efficiency, enterprises can increase operating revenue without increasing asset scale, thereby enhancing corporate profitability.

2.4.3 International Research Related to Total Asset Turnover

In international research, total asset turnover is also regarded as an important indicator for measuring enterprise operational efficiency. Ross et al. (2016) pointed out that total asset turnover can reflect an enterprise's asset utilization efficiency and is one of the important measurement indicators for business operational performance.

Penman (2013), in "Financial Statement Analysis and Security Valuation," pointed out that corporate profitability is not only affected by profitability indicators

but also by asset operational efficiency. When enterprises can improve asset turnover efficiency, their profitability usually increases accordingly.

Fama and French (2015), when researching corporate financial performance, pointed out that business operational efficiency is an important factor affecting corporate profitability, and asset turnover is one of the important indicators for measuring business operational efficiency.

In research related to the air transport industry, Doganis (2010), in "Flying Off Course: Airline Economics and Marketing," pointed out that aviation enterprise profitability is closely related to operational efficiency. When aviation enterprises can improve aircraft utilization rates and route operational efficiency, their operating revenue levels will increase, thereby promoting an increase in asset turnover.

Furthermore, Gillen and Lall (2016), when researching the operational performance of global airlines, found that aviation enterprises can effectively improve asset utilization efficiency by optimizing route networks and improving operational efficiency, thereby increasing total asset turnover.

In summary, international scholars generally believe that total asset turnover is an important indicator for measuring enterprise asset utilization efficiency. By improving asset utilization efficiency, enterprises can increase operating revenue while maintaining stable asset scale, thereby enhancing corporate profitability.

2.5 Equity Multiplier

2.5.1 Concept and Calculation Method of Equity Multiplier

Equity multiplier is one of the important indicators in the DuPont analysis system, mainly used to reflect an enterprise's capital structure and financial leverage level. The equity multiplier is typically used to measure what proportion of an enterprise's assets comes from debt financing, and its calculation formula is:

Equity Multiplier = Total Assets ÷ Shareholders' Equity

Ross et al. (2016), in "Corporate Finance," point out that the equity multiplier can reflect the characteristics of an enterprise's capital structure. When an enterprise's equity multiplier is high, it indicates that the enterprise uses more debt financing, thus having higher financial leverage. Conversely, when the equity multiplier is low, it indicates that the enterprise's capital structure is relatively stable.

In the DuPont analysis system, the equity multiplier is one of the important factors affecting return on equity. Soliman (2008), when researching the DuPont

analysis model, pointed out that by moderately increasing the level of financial leverage, enterprises can, to a certain extent, increase return on equity, thereby enhancing corporate profitability. However, if the enterprise's debt ratio is too high, it may increase financial risk.

Brigham and Houston (2018) believed that when making capital structure decisions, enterprises need to weigh profitability against financial risk. Moderate financial leverage can improve enterprise capital utilization efficiency, but excessively high leverage levels may lead to increased debt servicing pressure, thereby affecting long-term enterprise development.

For air transport enterprises, due to their capital-intensive characteristics requiring substantial investment in aircraft procurement, maintenance, and infrastructure construction, aviation enterprises typically have a relatively high asset-liability ratio. Doganis (2010), when researching airline business models, pointed out that aviation enterprises often rely on debt financing when expanding fleet size and route networks, therefore their equity multiplier levels are usually high.

Therefore, in research on aviation enterprise profitability, the equity multiplier can not only reflect enterprise capital structure but also reveal the impact of financial leverage on profitability.

2.5.2 Domestic Research Related to Equity Multiplier

In domestic research, many scholars have studied the equity multiplier from the perspective of capital structure. Zhang (2020), when researching the financial performance of listed companies, pointed out that there is a close relationship between enterprise capital structure and profitability. When enterprises reasonably utilize financial leverage, they can effectively increase return on equity, thereby enhancing corporate profitability.

Li (2019), through analysis of financial data from Chinese listed companies, found a certain degree of positive correlation between the equity multiplier and corporate profitability. Research indicates that when enterprises moderately increase their debt financing ratio, they can improve capital utilization efficiency, thereby enhancing corporate profit levels.

In research related to the air transport industry, Wang (2020), when researching the financial performance of Chinese airlines, pointed out that aviation enterprises generally have a relatively high asset-liability ratio, due to the need for substantial investment in aircraft procurement and fleet renewal. The research found that aviation enterprises can enhance profitability through financial leverage while reasonably controlling debt scale.

Furthermore, Liu (2019), when researching the operational performance of Chinese aviation enterprises, pointed out that aviation enterprises often need to meet funding needs through debt financing when expanding business scale. Therefore, the equity multiplier reflects, to a certain extent, the capital structure characteristics of aviation enterprises.

Overall, domestic research generally believes that the equity multiplier has an important impact on corporate profitability, but enterprises need to maintain a balance between increasing financial leverage and controlling financial risk.

2.5.3 International Research Related to Equity Multiplier

In international research, many scholars have conducted in-depth studies on the equity multiplier from the perspective of capital structure theory. Modigliani and Miller (1958) proposed the famous MM theory, suggesting that under ideal market conditions, an enterprise's capital structure does not affect its value. However, in real market environments, due to factors such as taxes, information asymmetry, and bankruptcy costs, an enterprise's capital structure can affect its value and profitability.

Myers (1984) proposed the Trade-off Theory, suggesting that when determining capital structure, enterprises need to weigh the tax benefits brought by debt financing against financial risk. Moderate debt financing can improve enterprise capital utilization efficiency, but excessively high debt levels increase the risk of enterprise bankruptcy.

In research related to the air transport industry, Gillen and Lall (2016), when researching the capital structure of global airlines, pointed out that due to the capital-intensive characteristics of aviation enterprises, they typically rely on debt financing to support fleet expansion. The research found a certain relationship between the capital structure of aviation enterprises and their profitability.

Furthermore, Doganis (2010), when researching airline business models, pointed out that aviation enterprises can, to a certain extent, enhance profitability through reasonable utilization of financial leverage. However, if enterprise debt levels are too high, it may increase financial risk.

In summary, international research generally believes that the equity multiplier is an important indicator for measuring an enterprise's financial leverage level. While using financial leverage to enhance profitability, enterprises also need to pay attention to controlling financial risk.

2.6 Profitability

2.6.1 Concept of Profitability

Profitability refers to an enterprise's ability to generate profits through its operating activities within a certain period. Profitability not only reflects business operating results but also embodies enterprise resource allocation efficiency and long-term development potential.

Penman (2013) pointed out that profitability is one of the most important contents in corporate financial analysis. By analyzing corporate profitability, one can better understand business operating status and future development potential.

Brigham and Houston (2018) believed that corporate profitability can typically be measured through multiple financial indicators, such as Return on Equity (ROE), Return on Assets (ROA), and profit margin on sales. Among these, Return on Equity is one of the most important indicators for measuring corporate profitability.

In the DuPont Analysis system, Return on Equity is regarded as the core indicator for measuring corporate profitability. By decomposing Return on Equity into net profit margin, total asset turnover, and equity multiplier, one can more comprehensively analyze the reasons for the formation of corporate profitability.

2.6.2 Evaluation Indicators of Profitability

In corporate financial analysis, profitability is typically evaluated through multiple indicators. Common indicators include Return on Equity, Return on Assets, and profit margin on sales.

Ross et al. (2016) pointed out that Return on Equity can reflect an enterprise's ability to use shareholder capital to generate profits and is an important indicator for measuring corporate profitability.

Furthermore, Return on Assets is also an important indicator for evaluating corporate profitability. This indicator can reflect an enterprise's ability to use all its assets to generate profits.

Domestic scholar Zhang (2020) pointed out that in research on corporate profitability, Return on Equity is typically used as a core indicator because it can comprehensively reflect corporate profitability and capital utilization efficiency.

In research related to the air transport industry, Wang (2020) pointed out that due to the large asset scale of aviation enterprises, when analyzing aviation enterprise profitability, it is typically necessary to combine multiple indicators for comprehensive analysis.

2.6.3 Summary of Domestic and International Research on Profitability

In domestic research, many scholars have studied the factors influencing corporate profitability. Li (2019), when researching the profitability of Chinese listed companies, pointed out that corporate profitability is mainly affected by factors such as cost control capability, asset operational efficiency, and capital structure.

Wang (2020), through empirical research, found a significant relationship between corporate profitability and asset turnover efficiency as well as financial leverage levels.

In research related to the air transport industry, Zhao et al. (2023), through analyzing the financial data of Chinese airlines, found that aviation enterprise profitability is closely related to load factors, operating costs, and route structure.

In international research, Fama and French (2015), when researching corporate profitability, pointed out that corporate profitability is not only affected by internal business operational efficiency but also by the macroeconomic environment and industry competition conditions.

Furthermore, Doganis (2010), when researching airline operational performance, pointed out that aviation enterprise profitability is affected by factors such as fuel prices, market demand, and operational efficiency.

Overall, domestic and international scholars generally believe that corporate profitability is comprehensively influenced by multiple factors, among which net profit margin, total asset turnover, and equity multiplier are important factors affecting corporate profitability.

2.7 Conceptual Framework

Based on the literature review above, it can be seen that corporate profitability is not determined by a single factor but is the result of the combined effect of various factors such as profit quality, asset operational efficiency, and financial leverage level. DuPont Analysis Theory, by decomposing return on equity into net profit margin, total asset turnover, and equity multiplier, provides a clear theoretical framework for systematically analyzing corporate profitability. Therefore, this study constructed a conceptual framework of factors influencing Hainan Airlines' profitability based on DuPont Analysis Theory and proposes research hypotheses on this basis.

This study uses return on equity (ROE) as the core indicator to measure the profitability of Hainan Airlines. According to the classic DuPont analysis model, return on equity can be decomposed into three interrelated factors: net profit margin, total asset turnover, and equity multiplier. Among these, net profit margin reflects the

enterprise's profit quality and cost control capability; total asset turnover embodies the enterprise's asset allocation and operational efficiency; and equity multiplier reflects the enterprise's financial leverage level and capital structure characteristics.

Combining the industry characteristics of the air transport industry — capital intensity, high proportion of fixed costs, and widespread use of financial leverage— this study believes that Hainan Airlines' profitability is primarily comprehensively influenced by the aforementioned three types of factors. In the conceptual framework, net profit margin, total asset turnover, and equity multiplier serve as independent variables, while return on equity serves as the dependent variable.

Based on the above analysis, the research conceptual framework constructed in this study is shown in Figure 2.1.

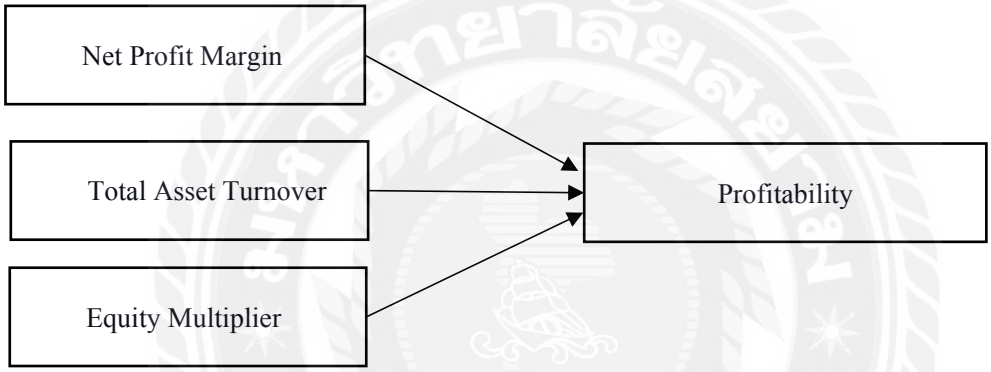

Figure 2.1 Conceptual Framework

Chapter 3 Research Methodology

3.1 Research Design

This study employed a quantitative research methods to explore the factors influencing the profitability of Hainan Airlines. The research was based on DuPont Analysis Theory, taking return on equity (ROE) as the core indicator for measuring corporate profitability, and focused on analyzing the relationships between the three major factors — net profit margin, total asset turnover, equity multiplier — and profitability. By combining financial data analysis with a questionnaire survey , it systematically reveals the formation mechanism and structural characteristics of Hainan Airlines' profitability.

During the data analysis process, descriptive statistical methods were used to present the demographic characteristics of the sample and the distribution of research variables. Second, Pearson correlation coefficient was used to analyze the correlations between net profit margin, total asset turnover, equity multiplier, and profitability, to test the strength of association between variables. On this basis, by constructing regression models and employing multiple regression analysis, the impact degree of each DuPont decomposition factor on Hainan Airlines' profitability was evaluated.

To ensure the scientific rigor and strictness of the research methods, before data analysis, this study used SPSS software to test the reliability and validity of the questionnaire data, to verify the reliability and effectiveness of the measurement tool. Through systematic statistical testing and model analysis, this study strived to objectively and comprehensively reveal the influence mechanism of Hainan Airlines' profitability, providing a solid methodological foundation for subsequent research result analysis and countermeasure suggestions.

In addition to the quantitative research methods, this study also incorporated a qualitative approach through semi-structured interviews to further enhance the depth and explanatory power of the research findings.

In terms of research design, semi-structured interviews were conducted to collect in-depth qualitative data related to corporate profitability and its influencing factors.

3.2 Research Population and Sample

The research population of this study was the employee group related to corporate operation management and financial decision-making within Hainan Airlines. As a representative air transport enterprise in China, Hainan Airlines has a complex organizational structure and diverse business types, covering multiple functional departments such as flight operations, ground services, marketing, financial

management, and comprehensive management. Employees in different positions and levels undertake different responsibilities in corporate operational activities, and their perceptions and judgments regarding corporate profitability, asset operational efficiency, and financial structure all have important impacts on corporate business decisions and profit performance. Therefore, taking Hainan Airlines' related employee group as the research population helps to comprehensively understand the influencing factors of corporate profitability from a multi-dimensional perspective, providing a realistic basis for research conclusions.

Regarding sample selection, this study selected Hainan Airlines-related employees as the research sample, with the sample size set at 400 questionnaires. The determination of the sample scale comprehensively considered various factors such as statistical principles, research resource constraints, and practical feasibility. From a statistical perspective, under the conditioned of a 95% confidence level and a 5% margin of error, combined with pre-survey results and sample scale settings of relevant empirical research, a sample size of 400 could effectively ensure the precision and stability of the research results (Krejcie & Morgan, 1970). A sample size of 400, while ensuring research quality, was conducive to improving research efficiency.

To ensure the representativeness and objectivity of the sample, this study adopted a random sampling method, randomly selecting sample subjects from the research population. During the sampling process, employees from various departments and positions had an equal probability of being selected, thereby reducing sample selection bias to a certain extent, enabling the sample to more truly reflect the structural characteristics and perception distribution of Hainan Airlines' overall employee group, and thus enhancing the reliability and generalizability of the research conclusions.

Regarding the interview sample, a total of six participants were selected from Hainan Airlines, including managers and key personnel from financial management, route operation management, and other relevant business departments. These participants were chosen due to their practical experience and familiarity with the company’s operational and financial conditions.

3.3 Research Hypotheses

This study aimed to empirically test the factors influencing the profitability of Hainan Airlines based on DuPont Analysis Theory. According to the previous literature review and conceptual framework construction, the formation of corporate profitability is the result of the combined effect of various financial factors. By decomposing return on equity, the sources of profitability and their change mechanisms can be systematically analyzed. Therefore, this study constructed research hypotheses around three core factors—net profit margin, total asset turnover,

and equity multiplier—to verify the specific impact of each factor on Hainan Airlines' profitability.

Net profit margin reflects corporate profit quality and cost control capability. For air transport enterprises, factors such as fuel costs, fare levels, and operating expenses directly affect changes in net profit margin, thereby influencing overall profitability. Therefore, the following hypothesis was proposed:

H1: Net profit margin has a significant impact on the profitability of Hainan Airlines.

Total asset turnover reflects corporate asset operational efficiency, embodying the enterprise's ability to utilize assets to generate revenue. Aviation enterprises have large asset scales and a high proportion of fixed assets. Improvement in asset utilization efficiency helps enhance profitability. Accordingly, it was proposed:

H2: Total asset turnover has a significant impact on the profitability of Hainan Airlines.

The equity multiplier reflects corporate financial leverage level and capital structure characteristics. Aviation enterprises generally rely on debt financing in their operations. Changes in financial leverage will have an amplifying effect on return on equity. Therefore, it was proposed:

H3: The equity multiplier has a significant impact on the profitability of Hainan Airlines.

Based on the above research hypotheses, this study constructed a research hypothesis model of factors influencing the profitability of Hainan Airlines, as shown in Figure 3.1.

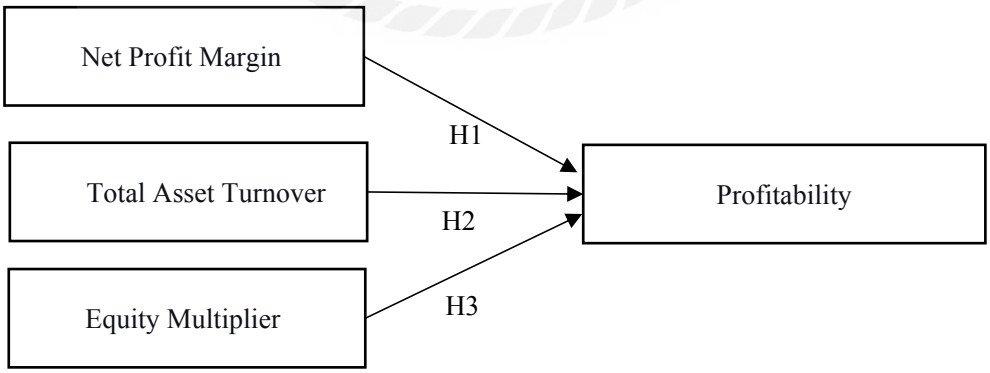

Figure 3.1 Hypotheses

3.4 Research Instrument

This study constructed a systematic and standardized measurement tool of the factors influencing the profitability of Hainan Airlines. The research instrument took DuPont Analysis Theory as the core framework, starting from three key dimensions—net profit margin, total asset turnover, and equity multiplier — to design targeted measurement items, conducting a multi-dimensional examination of corporate profitability and its influence mechanism.

A structured questionnaire was designed as the main research instrument. The questionnaire items are designed based on DuPont Analysis Theory and related literature, focusing on corporate profit quality, asset operational efficiency, and financial leverage application. Simultaneously, return on equity (ROE) is used as a comprehensive indicator to measure profitability, evaluating the corporate overall profit level. The questionnaire uses a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) for measurement, which can relatively accurately reflect respondents' subjective perception levels of each measurement item, facilitating subsequent statistical analysis and model testing.

The questionnaire contains a total of 24 questions, with the overall structure divided into two main parts. In the first part is a survey of basic respondent information, containing 4 questions including gender, age, education background, and work tenure, used to describe the demographic characteristics of the sample. In the second part is the measurement of research variables, containing a total of 20 questions, designed around four dimensions: net profit margin, total asset turnover, equity multiplier, and profitability. The specific measurement items are shown in Table 3.1.

In terms of specific item settings, the net profit margin dimension primarily measures from perspectives such as cost control capability, rationality of income structure, and profit stability. The total asset turnover dimension focuses on examining corporate asset allocation efficiency, fixed asset utilization degree, and asset support capability for revenue. The equity multiplier dimension focuses on corporate capital structure rationality, debt financing application, and the impact of financial leverage on profitability. The profitability dimension takes return on equity as the core, conducting a comprehensive evaluation of corporate overall profit performance. Through the above item settings, the key influencing factors of Hainan Airlines' profitability can be relatively comprehensively reflected.

To ensure the scientificity and reliability of the measurement instrument, this study used Cronbach's Alpha coefficient to test the internal consistency of the overall questionnaire and each dimension. Cronbach's Alpha coefficient can effectively measure the correlation degree among scale items and is a widely used reliability testing method in questionnaire research. It is generally believed that when the α

coefficient is greater than 0.7, the scale has good reliability; when the α coefficient is close to or above 0.8, it indicates that the scale has high internal consistency.

Through the design and application of the research instrument, this study could systematically obtain relevant data on Hainan Airlines' profit quality, asset operational efficiency, and financial leverage application, laying a solid data foundation for subsequent reliability and validity analysis, multiple regression analysis, and research hypothesis testing. It also provides a measurable paradigm for empirical research on enhancing aviation enterprise profitability.

Table 3.1 Measurement Items

Variable	Measurement Item	NO.
Net Profit Margin	The company can maintain the stability of main business profits through effective cost control measures.	1
	The company's control over fuel costs, labor costs, and other operating costs helps improve overall profit levels.	2
	The company's income structure is relatively reasonable, helping to reduce profit fluctuation risks.	3
	The company has strong profitability in fare setting and revenue management.	4
	The company's profitability is relatively less affected by short-term market fluctuations.	5
Total Asset Turnover	The company's existing asset scale can effectively support the growth of main business revenue.	6
	The company's utilization efficiency of fixed assets such as aircraft is high.	7
	The company's route network layout helps improve asset utilization efficiency..	8
	The company has improved the ability of unit assets to create revenue through reasonable asset allocation.	9
	The company's overall asset turnover efficiency has a clear promoting effect on profitability.	10
Equity Multiplier	The company reasonably uses debt financing to enhance shareholder equity return levels.	11
	The company's capital structure is generally maintained at a relatively reasonable level.	12
	The application of the company's financial leverage helps amplify profitability.	13
	The company has strong debt-servicing ability, able to support a certain degree of debt expansion.	14
	The company actively uses leverage to enhance profit levels while controlling financial risks.	15
ROE	The company's overall profit level can create stable returns for shareholders.	16

	The company's return on equity is within a reasonable industry range.	17
	The company's profitability has a certain competitive advantage within the industry.	18
	The company's profitability has good continuity.	19
	The company's overall profit performance can support long-term enterprise development.	20

In terms of research instrument, an interview guide was developed based on the DuPont Analysis framework. The interview questions mainly focused on key aspects including cost control, asset utilization efficiency, and the application of financial leverage.

3.5 Scale Reliability and Validity Analysis

To ensure the reliability and validity of the questionnaire data, it is necessary to conduct reliability and validity tests on the research scale before formally conducting empirical analysis. Reliability analysis is used to test the consistency and stability of scale measurement results, while validity analysis is used to evaluate whether the scale can effectively measure the theoretical construct of interest in the research. This study used SPSS statistical analysis software to conduct systematic reliability and validity tests on the overall questionnaire and each variable dimension.

3.5.1 Questionnaire Reliability Analysis

Reliability refers to the degree of consistency of measurement results, reflecting whether a measurement tool can obtain stable and consistent results when measuring the same research object at different times or under different sample conditions. In questionnaire research, the reliability level is directly related to the reliability of research conclusions. Therefore, this study used Cronbach's Alpha coefficient, the most widely applied in questionnaire research, to test the reliability of the scale.

Cronbach's Alpha coefficient reflects the internal consistency level of the scale by measuring the correlation degree among measurement items within the same dimension. It is generally believed that when the α coefficient is below 0.6, the scale reliability is poor; when the α coefficient is between 0.6 and 0.7, reliability is at a medium level; when the α coefficient is between 0.7 and 0.8, reliability is good; when the α coefficient is greater than 0.8, it indicates that the scale is highly reliable. The specific reliability evaluation criteria are shown in Table 3.2.

Table 3.2 Reliability Evaluation Criteria

Cronbach's Alpha Value	Result
Cronbach's Alpha<0.6	Unreliable
0.6<Cronbach's Alpha<0.7	Moderately Reliable
0.7<Cronbach's Alpha<0.8	Relatively Reliable
Cronbach's Alpha>0.8	Highly Reliable

In this study, the questionnaire was constructed around DuPont Analysis Theory, setting four dimensions: net profit margin, total asset turnover, equity multiplier, and profitability (ROE), each containing 5 measurement items, aiming to comprehensively depict Hainan Airlines' profitability and its influencing factors. Cronbach's Alpha coefficient was used to test the internal consistency of each variable dimension and the overall questionnaire. The results are shown in Table 3.3.

Table 3.3 Reliability Test Results

Variable	Cronbach's Alpha	N of Items
Net Profit Margin	0.834	5
Total Asset Turnover	0.821	5
Equity Multiplier	0.829	5
Profitability (ROE)	0.845	5

From Table 3.3, it can be seen that the Cronbach's Alpha coefficients for each variable are all greater than 0.8, indicating that the scale for each variable has high internal consistency. Additionally, the overall Cronbach's Alpha coefficient for the questionnaire is 0.856, further indicating that the scale adopted in this study is highly reliable and can meet the needs of subsequent empirical analysis.

3.5.2 Questionnaire Validity Analysis

On the basis of passing the reliability test, this study further tested the validity of the questionnaire. Validity refers to the extent to which a measurement tool can truly and accurately reflect the theoretical construct of the research object. This study mainly tested the effectiveness of the questionnaire scale through structural validity analysis.

In structural validity testing, the Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of Sphericity are usually combined to determine whether the data are suitable for factor analysis. It is generally believed that when the KMO value is greater than 0.6, the data are suitable for factor analysis; when the KMO value is greater than 0.8, it indicates that the scale has good structural validity. Simultaneously, a significant Bartlett's Test of Sphericity (Sig. < 0.05) indicates a strong correlation among variables, meeting the prerequisite for factor analysis.

This study conduced KMO Test and Bartlett's Test of Sphericity on the questionnaire data. The results are shown in Table 3.4.

Table 3.4 Results of KMO Test and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.815
Bartlett's Test of Sphericity	Approx. Chi-Square	4216.372
	df	190
	Sig.	0.000

From Table 3.4, it can be seen that the KMO value of the questionnaire scale is 0.815, indicating that the sample data are suitable for factor analysis. The Bartlett's Test of Sphericity result is significant ($p < 0.001$), rejecting the null hypothesis, indicating significant correlations among variables, meeting the requirements for factor analysis. Therefore, the questionnaire in this study performs well in terms of structural validity.

In summary, the questionnaire scale adopted in this study meets statistical requirements in both reliability and validity tests, possessing high reliability and validity, providing a solid data foundation for subsequent correlation analysis, multiple regression analysis, and research hypothesis testing.

3.6 Data Collection

Regarding data collection, this study adopted a structured questionnaire survey to obtain perception data from management and related practitioners on profitability influencing factors. The questionnaire uses a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) for measurement, to quantify respondents' evaluations of corporate profit quality, asset operational efficiency, and financial leverage level. Simultaneously, combined with Hainan Airlines' publicly disclosed financial statement data in recent years, relevant financial indicators were calculated and analyzed to enhance the objectivity and reliability of the research conclusions.

This study employed a quantitative research methods taking relevant managers and business personnel of Hainan Airlines as survey subjects, collecting research data through questionnaire surveys. The data collection period was from May 2025 to June 2025. Questionnaires were primarily distributed and collected through online questionnaire platforms, considering the actual conditions of the respondents, ensuring that the questionnaire could cover different departments and position levels to enhance the representativeness of the sample.

During the questionnaire distribution process, the research team explained the purpose of the study and the requirements for completing the questionnaire in detail. It was emphasized that the questionnaire results were for academic research only and

that respondents' personal information would be kept strictly confidential, thereby improving the authenticity and validity of the responses. A total of 400 questionnaires were distributed, and 392 questionnaires were collected. After data screening, 14 questionnaires were excluded due to incompleteness, logical contradictions, or obvious response patterns (e.g identical answers across all items). Ultimately, 378 valid questionnaires were obtained, with an effective response rate of 94.5%, meeting the requirements for subsequent statistical analysis.

Based on the questionnaire survey data, this study also collected Hainan Airlines' publicly disclosed financial statement data in recent years to calculate key financial indicators such as net profit margin, total asset turnover, equity multiplier, and return on equity. By combining financial data analysis with questionnaire data, this study provides a more comprehensive analysis of Hainan Airlines' profitability and its influencing factors from both objective indicators and subjective perceptions.

3.7 Data Analysis

To systematically test the research hypotheses, this study used SPSS statistical analysis software to process and analyze the questionnaire data. The data analysis process mainly includes four steps: descriptive statistical analysis, correlation analysis, multiple regression analysis,and content analysis.

3.7.1 Descriptive Statistical Analysis

Descriptive statistical analysis was mainly used to present the basic characteristics of the sample and the distribution of each research variable. This study conducted statistical analysis on demographic variables including respondents' gender, age, education background, and work tenure to understand the sample structure characteristics. Simultaneously, it calculated the mean, standard deviation, minimum value, and maximum value of net profit margin, total asset turnover, equity multiplier, and profitability (ROE) to grasp the central tendency and dispersion degree of each variable, providing a basis for subsequent correlation analysis and regression analysis.

3.7.2 Correlation Analysis

On the basis of descriptive statistical analysis, this study used the Pearson Correlation Coefficient to test the correlation relationships among research variables. By analyzing the correlations between net profit margin, total asset turnover, equity multiplier, and profitability (ROE), it preliminarily determined whether there was a significant association between each independent variable and the dependent variable, and tested whether there was a multicollinearity problem among variables. The results of correlation analysis provide a basis for constructing multiple regression models subsequently.

3.7.3 Multiple Regression Analysis

To further test the research hypotheses, this study constructed a multiple regression model, taking profitability (return on equity, ROE) as the dependent variable, and net profit margin, total asset turnover, and equity multiplier as independent variables, to empirically test the factors influencing the profitability of Hainan Airlines. Through regression analysis, the direction and degree of influence of each DuPont decomposition factor on profitability are quantified.

During the model estimation process, this study focused on the sign and significance level of the regression coefficients to determine whether the research hypotheses are established. Simultaneously, combined with the model's coefficient of determination (R^2) and adjusted coefficient of determination, the explanatory power of the regression model was evaluated. Through multiple regression analysis, this study could systematically reveal the internal mechanism of Hainan Airlines' profitability formation, providing empirical evidence for subsequent research result analysis and countermeasure suggestions.

3.7.4 Content Analysis

For data analysis, the interview data were analyzed using content analysis. The qualitative findings were then compared and integrated with the results of the quantitative analysis, in order to provide a more comprehensive understanding of the factors affecting the profitability of Hainan Airlines.

Chapter 4 Findings and Discussion

4.1 Research Results

4.1.1 Demographic Characteristics of Respondents

Table 4.1 Descriptive Statistical Analysis of Respondents

Variable	Option	Number of People	Percentage
Gender	Male	198	52.4
	Female	180	47.6
Age	Under 26 Years Old	63	16.7
	26-35 Years Old	154	40.7
	36-45 Years Old	105	27.8
	Over 45 Years Old	56	14.8
Education Level	Associate degree or below	78	20.6
	Bachelor's degree	149	39.4
	Master's Degree	114	30.2
	Doctoral degree	37	9.8
Work Tenure	Less than 3 years	71	18.8
	3 – 5 years	116	30.7
	6 – 10 years	124	32.8
	Over 10 years	67	17.7
Total		378	100.0

This survey collected a total of 378 valid questionnaires. The sample covers multiple dimensions including gender, age, education background, and work tenure, which can relatively comprehensively reflect the basic structural characteristics of Hainan Airlines employees, providing a reliable data foundation for subsequent empirical analysis.

From the gender distribution, male employees account for 52.4%, and female employees account for 47.6%, with a relatively balanced overall gender structure. This structure helps enterprises form a diversified perspective in operation management and service decision-making, thereby more comprehensively responding to changes in aviation market demand.

From the age structure, employees aged 26–35 account for the highest proportion (40.7%), forming the core force of company operation and management. This group has strong execution and adaptation abilities, but also has certain career mobility, placing higher demands on corporate continuous operation and asset efficiency management. Employees aged 36–45 account for 27.8%, and their rich industry experience helps enhance the stability of route planning, cost control, and asset allocation decisions. Employees under 26 years old account for 16.7%, having advantages in digital tools and data application, but still need further cultivation in understanding financial structure and profit analysis.

In terms of educational background, employees with a bachelor's degree or above account for 79.4% of the sample, indicating that the respondents generally have a relatively high level of education.

In terms of work tenure, employees with 3–5 years and 6–10 years of experience account for 30.7% and 32.8%, respectively, representing the largest proportions in the sample. Employees with less than 3 years and over 10 years of experience account for 18.8% and 17.7%, respectively, indicating a relatively balanced distribution of work experience.

Overall, the sample demonstrates good representation in terms of both educational background and work tenure, providing a reliable basis for subsequent empirical analysis.

4.1.2 Correlation Analysis

To preliminarily test the relationships among variables in the DuPont analysis model, this study used the Pearson correlation coefficient to determine the correlations between net profit margin, total asset turnover, equity multiplier, and profitability (return on equity, ROE). The results are shown in Table 4.2.

Table 4.2 Correlation Analysis Results

Variable	Net Profit Margin	Total Asset Turnover	Equity Multiplie	Profitability (ROE)
Net Profit Margin	1			
Total Asset Turnover	0.638**	1		
Equity Multiplie	0.612**	0.625**	1	
Profitability (ROE)	0.684**	0.659**	0.671**	1

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Correlation analysis results show that net profit margin, total asset turnover, and equity multiplier are all significantly positively correlated with profitability (ROE). Among these, net profit margin has the highest correlation coefficient with ROE (0.684), indicating that profit quality has an important impact on Hainan Airlines' profitability. Equity multiplier (0.671) and total asset turnover (0.659) also maintain a high correlation level with ROE.

The above results indicate that Hainan Airlines' profitability is not only affected by the profit level itself but is also closely related to asset operational efficiency and financial leverage application, preliminarily verifying the applicability of DuPont Analysis Theory in aviation enterprise profitability research.

4.1.3 Multiple Regression Analysis

On the basis of correlation analysis, this study further constructed a multiple regression model to empirically test the impact of net profit margin, total asset turnover, and equity multiplier on profitability (ROE). The regression results are shown in Table 4.3.

Table 4.3 Multiple Regression Analysis Results

Item	Unstd. B	Std. Beta	t	Sig.	VIF	F	Durbin-Watson
C	1.987	—	7.63	0.000		61.48 ***	1.972
Net Profit Margin	0.462	0.491	5.84	0.000	1.14		
Total Asset Turnover	0.338	0.326	4.17	0.000	1.18		
Equity Multiplie	0.417	0.453	5.36	0.000	1.21		
R Square	0.658						
Adjusted R Square	0.649						

NOTE: *P<0.05, **P<0.01, ***P<0.001

The regression results show that the model is overall significant ($F = 61.48$, $p < 0.001$). The Durbin-Watson value is 1.972, indicating no serious autocorrelation problem in the residuals. The adjusted coefficient of determination of the model is 0.649, indicating that net profit margin, total asset turnover, and equity multiplier can explain approximately 64.9% of the variation in profitability. Simultaneously, the variance inflation factor (VIF) for each variable is less than 5, with no serious multicollinearity problem.

From the regression coefficients, net profit margin, total asset turnover, and equity multiplier all have significant positive effects on profitability (ROE). Among these, the standardized regression coefficient for net profit margin is the largest (Beta

= 0.491), indicating that profit quality is the core factor affecting Hainan Airlines' profitability. Equity multiplier (Beta = 0.453) is next, indicating that reasonable use of financial leverage helps enhance shareholder returns. The impact of total asset turnover (Beta = 0.326) is relatively weaker but still statistically significant, reflecting the important role of asset operational efficiency in the formation of aviation enterprise profitability.

Based on the regression analysis results, the research hypotheses of this study are verified:

H1: Net profit margin has a significant positive impact on the profitability of Hainan Airlines (Supported).

H2: Total asset turnover has a significant positive impact on the profitability of Hainan Airlines (Supported).

H3: Equity multiplier has a significant positive impact on the profitability of Hainan Airlines (Supported).

4.2 Discussion

This study, based on DuPont Analysis Theory and using quantitative empirical methods, systematically analyzes the profitability of Hainan Airlines and its influencing factors. The research results indicate that net profit margin, total asset turnover, and equity multiplier all have significant positive effects on profitability (return on equity, ROE). This conclusion not only remains consistent with the previous research hypotheses but also, to some extent, confirms the applicability of DuPont Analysis Theory in air transport enterprises. Combining industry characteristics and the actual situation of the enterprise, the relevant research results can be discussed from the following aspects.

First, net profit margin has the most significant positive impact on the profitability of Hainan Airlines. This result indicates that, against the backdrop of fierce competition and high cost pressure in the current air transport industry, profit quality remains the core factor determining corporate profitability. In the cost structure of aviation enterprises, fuel costs, labor costs, and aircraft lease expenses account for a relatively high proportion and have strong rigidity characteristics in the short term. Therefore, the enterprise's capabilities in fare management, route revenue optimization, and operating cost control directly determine the level of profit. If Hainan Airlines can improve the net contribution per unit of revenue through refined cost management, revenue management system optimization, and income structure adjustment, it will form significant support for overall profitability.

Second, the positive impact of total asset turnover on profitability further highlights the importance of asset operational efficiency. The air transport industry is a typical capital-intensive industry, with large-scale investments in fixed assets such

as aircraft and long payback periods. Asset utilization efficiency is directly related to the sustainability of corporate profitability. The results of this study indicate that improvement in asset turnover efficiency helps enhance the enterprise's ability to create revenue using existing assets. For Hainan Airlines, by optimizing route network structure, improving aircraft utilization rates, and reasonably configuring fleet size, revenue levels can be increased without significantly increasing asset investment, thereby improving profit performance.

Third, the significant positive impact of the equity multiplier on profitability reflects the amplifying effect of financial leverage in aviation enterprise profits. Aviation enterprises generally rely on debt financing to support fleet expansion and route layout during their development. Reasonable use of financial leverage can, to a certain extent, enhance shareholder equity returns. However, it needs to be emphasized that the positive effect of financial leverage is based on the premise of maintaining a relatively robust financial structure. If the debt scale is too high or the debt maturity structure is unreasonable, it may intensify corporate financial risks and negatively impact profitability. Therefore, while using financial leverage to enhance profitability, Hainan Airlines should focus on optimizing debt structure and managing debt-servicing capabilities to avoid weakening profit stability due to excessive leverage.

From an overall perspective, the research results of this study indicate that the formation of Hainan Airlines' profitability does not rely on a single factor but is the result of the synergistic effect of profit quality, asset operational efficiency, and financial leverage level. This discovery is highly consistent with the viewpoint of "structural profitability" emphasized by DuPont Analysis Theory. Compared with simply pursuing profit scale growth, enterprises should pay more attention to optimizing the profit structure, achieving long-term stable improvement of profitability through multi-dimensional collaborative enhancement.

Furthermore, combining the cyclical characteristics of the air transport industry, the results of this study also have certain practical implications. In situations where industry cyclical fluctuations are significant, enterprises should pay more attention to internal operational efficiency and financial structure management to reduce the impact of external environmental changes on profitability. In its future development process, Hainan Airlines can continuously improve asset operational efficiency and reasonably control financial leverage levels while consolidating profit quality, thereby enhancing overall profitability and risk resistance capabilities.

On the basis of questionnaire surveys and multiple regression analysis, to further enhance the realistic explanatory power and research depth of the conclusions, this study conducted supplementary research through semi-structured interviews with some managers and business backbones of Hainan Airlines. Interview subjects mainly included financial management personnel, route operation management personnel,

and related business heads, totaling 6 persons. The interview content focused on core issues such as the formation mechanism of corporate profitability, cost control, asset utilization efficiency, and financial leverage application.

Interview results show that interviewees generally believe that cost control capability is the primary factor affecting corporate profitability. Multiple interviewees mentioned that fuel costs, labor costs, and aircraft lease expenses account for a relatively high proportion in the cost structure of aviation enterprises, with limited adjustment space in the short term. Therefore, reducing unit operating costs through refined management is a key way to improve net profit margin. This viewpoint is highly consistent with the conclusion of this study's empirical analysis that "net profit margin has the most significant positive impact on profitability."

Regarding asset operational efficiency, interview subjects generally pointed out that aircraft utilization rates and route network layout directly determine asset turnover efficiency. Some interviewees stated that by optimizing flight schedule arrangements, improving fleet scheduling flexibility, and phasing out inefficient routes, revenue levels can be increased without increasing fixed asset investment, thereby improving corporate profit performance. This discovery, from a practical perspective, confirms the empirical result that total asset turnover has a significant positive impact on profitability.

Furthermore, regarding the application of financial leverage, interviewees generally believe that reasonable debt financing helps enhance shareholder returns in the short term but is accompanied by certain financial risks. Management pays more attention to the balance between debt scale and debt-servicing ability in actual decision-making, avoiding adverse effects on long-term steady operation of the enterprise due to excessive leverage. This viewpoint is consistent with this study's research conclusion that the equity multiplier has a positive impact on profitability but needs to be applied under the premise of controllable risk.

Qualitative interview results effectively supplement and explain the quantitative empirical conclusions from the perspective of actual enterprise operations, further verifying the applicability of DuPont Analysis Theory in Hainan Airlines' profitability research, and also enhancing the realistic rationality and credibility of this study's research conclusions.

In summary, the empirical results of this study not only provide targeted explanations for enhancing Hainan Airlines' profitability but also verify the explanatory power of DuPont Analysis Theory in aviation enterprise research from an empirical perspective, providing useful references for subsequent research and management practice.

Chapter 5 Conclusion and Recommendation

5.1 Conclusion

This study, using DuPont Analysis Theory as the research framework and taking Hainan Airlines as the research subject, comprehensively employed quantitative empirical analysis and semi-structured interview methods to conduct systematic research on corporate profitability and its influencing factors. By constructing a multiple regression model with net profit margin, total asset turnover, and equity multiplier as independent variables and profitability as the dependent variable, it empirically tested the influence mechanism of DuPont decomposition factors on aviation enterprise profitability. The main research conclusions are as follows.

First, net profit margin has a significant positive impact on the profitability of Hainan Airlines and is the core factor affecting profitability. Empirical results show that, controlling for other factors, the improvement of net profit margin can significantly increase return on equity. This indicates that, against the backdrop of strong cost rigidity and intense price competition in the air transport industry, the improvement of corporate profit quality has a decisive effect on overall profitability.

Second, total asset turnover has a significant positive impact on profitability, reflecting the importance of asset operational efficiency. Research results show that improvement in asset utilization efficiency helps enhance the enterprise's ability to create revenue under a given asset scale. For capital-intensive aviation enterprises, improving aircraft utilization rates, optimizing route structures, and reasonably allocating assets are important ways to improve profitability.

Third, equity multiplier has a significant positive impact on profitability, reflecting the amplifying effect of financial leverage. Under the premise of reasonably controlling risks, moderate use of financial leverage can enhance shareholder equity return levels. But it also indicates that financial structure management plays a key role in the formation of profitability, and over-reliance on debt may pose a potential threat to the long-term steady development of the enterprise.

Overall, the profitability of Hainan Airlines is the result of the synergistic effect of net profit margin, total asset turnover, and equity multiplier. The research conclusions of this study empirically verify the applicability of DuPont Analysis Theory in air transport enterprises, providing new empirical evidence for an in-depth understanding of the formation mechanism of aviation enterprise profitability.

5.2 Recommendation

Based on the above research conclusions, combined with the operational characteristics of Hainan Airlines and the development environment of the air

transport industry, this study proposes the following targeted recommendations from three aspects: profit quality, asset operational efficiency, and financial structure optimization.

First, continuously improve net profit margin and strengthen profit quality management. Hainan Airlines should further enhance refined cost management, focusing on key expenditure items such as fuel costs, labor costs, and aircraft lease expenses. Simultaneously, by improving the revenue management system, optimizing fare strategies, and expanding high-value-added service revenue, increase the profit contribution per unit of revenue, thereby enhancing the stability of overall profitability.

Second, optimize asset allocation structure and improve total asset turnover efficiency. Hainan Airlines should further improve aircraft utilization rates and route operational efficiency on the basis of the existing asset scale, avoiding blind expansion of asset scale. Through scientific planning of route networks, flexible adjustment of fleet structure, and enhancement of asset scheduling capabilities, achieve simultaneous improvement in asset utilization efficiency and profitability without significantly increasing capital investment.

Third, reasonably use financial leverage and optimize capital structure. While using debt financing to support business development, Hainan Airlines should focus on debt structure management and debt-servicing ability, avoiding increased financial risks due to excessive leverage. By optimizing debt maturity structure, reducing financing costs, and improving capital use efficiency, fully exert the positive promoting effect of the equity multiplier on profitability under the premise of ensuring financial security.

Fourth, establish a collaborative enhancement mechanism to achieve systematic optimization of DuPont elements. In profitability management, Hainan Airlines should avoid single-indicator orientation and focus on the coordinated development among net profit margin, asset turnover, and equity multiplier. Through systematic management concepts, promote the collaborative optimization of profit quality, operational efficiency, and financial structure, enhancing the sustainability of corporate profitability.

5.3 Directions for Future Research

Although this study conducts a relatively systematic analysis of Hainan Airlines' profitability at both theoretical and empirical levels, there are still certain limitations, which need to be further expanded in future research.

First, the research subject has a certain degree of singularity, using Hainan Airlines as a case study. Caution is still needed when generalizing the research

conclusions to other aviation enterprises or different industries. Future research can introduce multiple airlines for comparative analysis to enhance the universality of research conclusions.

Second, there is still room for further expansion of research variables. This study primarily selected net profit margin, total asset turnover, and equity multiplier as core variables based on DuPont Analysis Theory. Future research can combine macroeconomic factors, industry cycle variables, or non-financial indicators for a more comprehensive analysis of aviation enterprise profitability.

Finally, research methods need further enrichment. This study used cross-sectional data for analysis, failing to fully reflect the dynamic change characteristics of profitability. Future research can combine time series data or panel data methods to conduct in-depth exploration of the evolution trends of aviation enterprise profitability.

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Appendix

Survey Questionnaire on Factors Influencing the Profitability of Hainan Airlines

Dear Respondent

Thank you for your participation in this questionnaire survey. The survey will be conducted anonymously, and your relevant information will be kept confidential. Thank you again for your cooperation.

Part Ⅰ: Basic Information

Please fill in the following basic information:
1. Your Gender
A Male
B Female
2. Your Age
A Under 26 Years Old
B 26-35 Years Old
C 36-45 Years Old
D Over 45 Years Old
3. Your Educational Background
A Associate degree or below
B Bachelor's degree
C Master's Degree
D Doctor's Degree
Work Tenure
A Less than 3 years
B 3-5 years
C 5-10 years
D Over 10 years

Part Ⅱ: Measurement of Factors Influencing Profitability

Please select according to your level of agreement: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

Measuring Item	Strongly Disagree	Relatively Disagree	Neutral	Relatively Agree	Strongly Agree
The company can maintain the stability of main business profits through effective cost control measures.					
The company's control over fuel costs, labor costs, and other operating costs helps improve overall profit levels.					
The company's income structure is relatively reasonable, helping to reduce profit fluctuation risks.					
The company has strong profitability in fare setting and revenue management.					
The company's profitability is relatively less affected by short-term market fluctuations.					
The company's existing asset scale can effectively support the growth of main business revenue.					
The company's utilization efficiency of fixed assets such as aircraft is high.					
The company's route network layout helps improve asset utilization efficiency..					
The company has improved the ability of unit assets to create revenue through					

reasonable asset allocation.					
The company's overall asset turnover efficiency has a clear promoting effect on profitability.					
The company reasonably uses debt financing to enhance shareholder equity return levels.					
The company's capital structure is generally maintained at a relatively reasonable level.					
The application of the company's financial leverage helps amplify profitability.					
The company has strong debt-servicing ability, able to support a certain degree of debt expansion.					
The company actively uses leverage to enhance profit levels while controlling financial risks.					
The company's overall profit level can create stable returns for shareholders.					
The company's return on equity is within a reasonable industry range.					
The company's profitability has a certain competitive advantage within the industry.					
The company's profitability has good continuity.					
The company's overall profit performance can support long-term enterprise development.					