FEASIBILITY STUDY FOR SETTING UP AN AIRLINE OF AEROTHAI

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การศึกษาความเป็นไปได้ในการจัดตั้งสายการบินของบริษัทวิทยุการบินแห่งประเทศไทยจำกัด ประกอบไปด้วย การศึกษาความเป็นไปได้ทางการตลาด เริ่มจากการวิเคราะห์จุดแข็ง จุดอ่อน,วิกฤติ และ โอกาส เพื่อหาปัจจัยที่นำไปสู่ความสำเร็จในธุรกิจสายการบินของบริษัทวิทยุการบินแห่งประเทศไทย จำกัด จากนั้นจะเป็นการวิเคราะห์ทางด้านทำเลที่ตั้ง, สถานการณ์ทางการตลาด, สภาพการแข่งขัน, และส่วนผสมทางตลาด ตามลำดับ ผลการวิเคราะห์สรุปได้ว่า ภาคใต้ของไทยเหมาะสมที่สุดสำหรับเป็นที่ตั้งของสายการบิน เนื่องจากสภาพภูมิประเทศที่เป็นชายฝั่งทะเล ทำให้สามารถดึงดูดนักท่องเที่ยวนักท่องเที่ยวทั้งชาวไทยและชาวต่างประเทศปริมาณมากในแต่ละปี นอกจากนี้เมื่อเทียบกับภาคอื่นพบว่า ภาคใต้การคมนาคมทางอากาศเป็นสิ่งที่สะดวกสบายที่สุด เนื่องจากถนนหนทางและทางรถไฟ ยังไม่สมบูรณ์และไม่ปลอดภัยเท่าที่ควร ที่สำคัญที่สุดก็คือ ทางภาคใต้รัฐได้เปิดเสรีให้เอกชน ก่อตั้งสายการบินมากกว่าภาคอื่นๆ โดยเฉพาะเส้นทางบินระหว่างจังหวัดซึ่งเป็นระยะทางสั้นๆ การบินไทยไม่ได้ทำการบินในเส้นทางดังกล่าว จึงเป็นการเปิดโอกาสให้เอกชนมาลงทุน

การศึกษาความเป็นไปได้ทางวิศวกรรม เป็นการศึกษาเกี่ยวกับการประมาณการจำนวนผู้โดยสาร การจัดหาเครื่องบินที่เหมาะสม การวางแผนฝูงบิน การวางแผนเที่ยวบิน การคำนวณต้นทุนและการคำนวณค่าโดยสาร จากการศึกษาได้กำหนด เครื่องบินที่ใช้ให้มีคุณลักษณะที่สามารถบินได้ในระยะสั้น ความถี่ของเที่ยวบินสูง มีขนาดเล็ก และประหยัดน้ำมัน ซึ่งจาการศึกษาได้ตัดสินใจใช้เครื่อง Jet Stream 31 หลังจากได้แบบเครื่องที่จะใช้บินแล้ว ต่อไปจะเป็นการวางแผนฝูงบิน การจัดเส้นทางบิน และการประมาณการต้นทุน และการคำนวณราคาค่าโดยสาร

การศึกษาความเป็นไปได้ทางการเงิน ได้แก่การศึกษาทางด้าน การลงทุน กระแสเงินสด อัตราผลตอบแทนการลงทุน การศึกษาความไวต่อการเปลี่ยนแปลงของจำนวนผู้โดยสาร

การศึกษานี้มีประโยชน์อย่างมากในการตัดสินใจของบริษัทฯ ในการตัดสินใจลงทุนในธุรกิจใหม่ โดยผลการศึกษาพบว่ามีความเป็นไปได้ที่บริษัทวิทยุการบินจะไปลงทุนในธุรกิจสายการบิน โดยเสนอให้มีที่ตั้งอยู่ทางใต้ของประเทศไทย และมีจุดประสงค์ที่จะกระจายนักเที่ยวจากจังหวัดภูเก็ตไปยังจังหวัดใกล้เคียง โดยกำหนดกลุ่มเป้าหมายหลักคือนักท่องเที่ยวชาวต่างชาติ การดึงดูดลูกค้าและเพิ่มช่องทางการขายควรจะมีการประชาสัมพันธ์ผ่านสื่อต่างๆ รวมทั้ง อินเตอร์เน็ต ทางด้านวิศวกรรมเสนอให้ใช้เครื่องบินเล็กที่สามารถบรรจุคนได้ไม่มากนัก แต่ความถี่ของเที่ยวบินสูง และประหยัดน้ำมัน ทางด้านการเงิน เสนอให้ใช้เงินลงทุนจากส่วนของผู้ถือหุ้นและการกู้เงินจากสถาบันการเงินของรัฐ

ภาควิชา	ศูนย์ระดับภูมิภาคทางวิศวกรรมระบบการผลิต	ลายมือชื่อนิสิต_____
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The feasibility study of the Aerothai's project to establish an airline in Thailand are including the studies in the aspects of marketing, engineering and financial. In the marketing feasibility study, the methodology started with the SWOT analysis to find out the critical success factors in the airline business. Then the location analysis, the market situation, market segmentation, the target market and the marketing mixed were identified respectively. The outcome showed that the southern part of Thailand has been the most appropriate location base due to its territory that attracts many of foreign tourists. Moreover, in the southern part, the air transportation was the most convenience mode. It was appropriate to set up an airline in the south rather than other parts since there was less short route provided by the Thaiways in this region. Our target market was the foreign tourists markets, which had the more purchasing power, and have limited time for travelling.

From the engineering feasibility study, starting with the fleet planing. After the plan, we got the aircraft specification, which have, short range, convenience, under high frequencies and save cost. It was the Jet Stream 31 that its performance was matching to our specification. The fleet planing should be synchronized with the cost calculation because how well we can plan the fleet that means a great amount of profit were generated. The cost calculation must be precise because it has an effect to our profit. The fare has been fixed under the regulation of IATA, 12 Baht/Nautical mile. For the routing, this airline plans to distribute the tourists to the others clean and clear environment, so the route will connect Phuket with Krabi, Ranong, and others.

From the financial feasibility study, the project will feasible, under the demand of 50% of the arrival passenger. The company will be deficit in the first 3 years. Then it will turn to be surplus in the year 2005and 2006. Until the5 years project life, with the 10% discount factor the project NPV would be 10.95 million Baht with the internal rate of return 19.85% .

It can be summarized that the Aerothai's project to set up an airline in Thailand was feasible in marketing, engineering and financial aspects. From the study, suggested that, the minimum demand in each route should not be lower than the 50% of the passenger's arrival to each airport. However, these amount were possibly since, we had only focus on the customers that arrival by plane. Indeed, there will be some demands, which came from the others mode of transportation like, car, bus or cruises. From the study, to set up an airline, the initial investment was about 16.8 million Bahts. This study is very important for Aerothai to investment in the new business. The results from the marketing, engineering and financial feasibility study have ensured that the companies will not loss from the investment.

Department : The Regional Centre for Manufacturing System Engineering

Field of study : Engineering Management Student's signature_____

Academic year : 2001 Adviser's signature_____

Co-Adviser's signature_____

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Pantip Jiramahakun

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CHAPTER 1
INTRODUCTION

The trend of the world in the 21 century will be the world of globalization in both information and capitalization supported by the considerable improvement in high technology and innovation. This trend resulted in the strong competitive among the business units. Each company has to cope with these extremely changes by developing a competitive strategies to gain the competitive edge in the business or at least for survival.

AEROTHAI, a non- profit air traffic service provider in Thailand, about 50 years in air traffic service enables its expertise in aviation industry. Challenged by the dramatically growth and our expertise in the aviation industry, the company has planed to expand its business to another related service, purposed to gain more income to balance its payment in the company.

We decided to expand our business into the airline industry based on the two major reasons. First, our company has many key competitive advantages such as, the cost effective, our expertise in aviation industry, its branched all over the airports in Thailand, as well as its core service of air traffics control that ensures the flight safety. Moreover, its existing aviation technologies strongly reduce the cost for airline operation.

Another reason is the market incentive. From the statistics of IATA (International Air Transportation Authority), in 1997, it indicated that, there was a considerable growth in the air transportation, about 4.4% in Asia Pacific Region. Especially, the statistics from Thailand Tourism authority, in 1999, which indicated that, the great number of passengers were dominantly destination to Thailand and most of them were the tourists from Europe, Japan, Thai wan, and Hong Kong.

In Thailand, in spite of being in the economic recession, the airline business stills growth at the high rate, resulted from the great expansion in the tourist industry as well as the Thai's government free flight policy. This policy has been, however, leading to, a number of new private airlines establishment, while, in the past, was monopolized by the Thaiways only. Bangkok Airways is one example, They used their strength of owning an airport in Koh Samui, expanded their routes of flight destination to many other tourist places.

AEROTHAI, however, our strength as an expert in Air traffic Control Service who has been experienced over 50 years in aviation business as well as the market opportunities mentioned above strongly induced us to go into this kind of business.

This research, however, purposes to study the feasibility of the AEROTHAI's project to establish an airline in Thailand. The research methodologies will be categorized into 5 stages.

At the first stage, it is the SWOT analysis, to identify the company strength and weakness as well as the opportunity and the threat for the expansion of the company to the airline business. From the SWOT analysis, we get a view of the company's potential as well as the

market opportunity for the airline business. Then the next stage becomes, the market research, this stage includes the targeting customer & segmentation and marketing mix.

After the marketing study, the customers are defined, then becomes the studying of the engineering requirements at the fourth stage: location base, route of flight, flight schedule, service features should be specified. Next, besides the analysis of engineering requirements, the management aspect should be in focused. On this stage, the form of business, the organization structure and management policy should be identified.

Finally, financial are studied to represent the budgeting, source of fund, cost estimating, demand for air travel, pricing, cash flow, NPV, as well as the Internal rate of return.

The feasibility study for setting up an airline in Thailand of Aerothai plays a major role as a decision making aided tool. It envisions the company in many aspects before justifying to go into a new business of airline industry.

Company Profile

Aeronautical Radio of Thailand Ltd., The company commonly known as AEROTHAI, is a non-profit state enterprise under the Ministry of Transportation. The Company's main function is to provide air traffic control services throughout Thailand. Its services also include to operate a Communication Center in the Aeronautical Fixed Telecommunications Network (AFTN) and to provide related services in communication and electronics for air traffic control.

For a half of century, AEROTHAI has been acknowledged for its expertise in air traffic control services. It is the first in the Asia-Pacific region to receive the prestigious Edward Warner Award, the highest honor in the aviation industry for overall commitment to the development of international aviation. AEROTHAI has since expanded operations successfully in other related services in Thailand and abroad. It has joined forces with ARINC, a leader in telecommunication networks and a co-founder of AEROTHAI, to provide the best possible service and to take an active role in the development and integration of world air traffic control operations. AEROTHAI has always been proud of our important role in the technological advancement and development of the air traffic control industry. Amongst other things, AEROTHAI also provides consulting services to countries seeking to further their air traffic control abilities.

The strength of the Company's Human Resources allows it to do just that. At AEROTHAI, staff undergo a multitude of frequent and rigorous training programs ranging from administration, management, social trends, culture, civilization and cross-cultural business, all in a bid to produce well-rounded, knowledgeable staff who would offer a brighter future, not only for AEROTHAI, but the country as a whole.

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History

Following the devastation of the World War II, Thailand was in need of an economic turn around. Therefore, the Thai Government decided to restart the air transport business within the Kingdom and invited international airlines to once again commerce operations. Subsequently, a co-operation of airlines and aviation-related companies around the world banded together and "Aeronautical Radio of Siam Ltd.," was born. And so, the important mission of linking Thailand to the aviation world was accomplished. In later years the Government, realizing the company's role in national security, bought back a majority share holdings and the company name was changed to "Aeronautical Radio of Thailand Ltd.," or "AEROTHAI" in brief.

As stipulated in the contract written with the Ministry of Transport and Communication, "Aeronautical Radio of Thailand" shall provide air traffic control, aeronautical telecommunication and related services to the needs of all providers of air transport. The Company is to maintain international standards as required by the International Civil Aviation Organization (ICAO) and to provide safety, and the expeditious, efficient and orderly flow or traffic.

Services

- The provision of air traffic control , aeronautical telecommunications services and air navigation aid facilities in the flight information region (FIR) of Thailand and all provincial airports as well as certain entrusted area of responsibility

- The provision of related services consisting of providing communications equipment for air transportation operators at airports in the country and aboard; the design, manufacture and installation of customized communication equipment; the provision of constancy and training in air traffic control, aeronautical telecommunications and engineering, and the installation and maintenance of communications equipment for domestic and international authorities.

- Air Traffic Radar Simulator : This product used for air traffic control training that provide the simulation of the real traffic situations with out interrupting the real radar system.

- Speed plus DX system : This equipment is used for providing a full system of communication between voice signal and teletype signal. It's used for facilitate the air traffic control service.

- Aeronautical Fixed Telecommunication (AFTN) terminal : This equipment is used for utilizing in transmitting data on air traffic control such as notice to airmen, flight plan, meteorological message and other necessary information for air traffic control, flight operation and air safety.

- ❑ The flight information and airport display : This equipment is used for data display on a VGA colour monitor and LED array display used for facilitating the operation of the briefing control.

Mission Statement

" AEROTHAI provides Air Traffic Control services for domestic as well as international operators with the highest regard for safety, orderliness and expedition of flights. The Company stands in the forefront of developments for the growth of the aviation in the South-East Asia Region. "

Background

AEROTHAI, as the state enterprise under the ministry of transportation had provided the air traffic service as well as its related services in Thailand for all over 50 years.

Our expertise in aviation industry, the availability of technological equipment, the effective human resource and the very high growth rate in air transportation strongly challenge to expand ourselves to another related service.

Our objectives for expanding to the new business are :

- ❖ To earn more income to balance the payment.
- ❖ To solve the problem of the excess employed officers
- ❖ Further development in the aviation industry
- ❖ To support the considerable growth in air transportation industry

The continuos improvement to expand to another related service enable the company to gain the profit, to increase the customer and employee satisfaction, to go into the full cycle of aviation industry as well as to prepare itself for the world class business.

However, airline industry becomes in our focus since it has many incentives to invest, the descriptions are discussed as the following :

❖ Our strength

- Cost effective resulted from the available technology, equipment, routing, human resource expertise especially the omitted flight charge that directly reduce the operation cost
- Strong relationship with the Department of Aviation Thailand due to its status of the state enterprise under the transportation ministry
- Corporate expertise in the related aviation services
- Skilled human factor in aviation services
- Branches almost all over the airports in Thailand
- Ensure safety of the flight due to its main service of air traffic service provider in Thailand

❖ The Market opportunities

From the statistic of International Air Transportation Association or IATA in 1997, the international passengers who use the airlines that are the member of IATA increase from the prior year 6.8%, as 412 Million people. While the quantities of goods have the growth rate 11 %, as 14.7 Million tons. However the economic crisis in the late of 1997 in Asia Pacific strongly deteriorate the growth rate of goods and passenger in this region. IATA has revised the prediction of the growth rate of the world's air transportation that from 1997-2001 the growth rate of air transportation will increase 5.4% annually compare with the existing of 6.6%, whereas that of Asia Pacific 4.4% compared with the existing 7.7%.

Especially, the statistics from Thailand Tourism authority, which indicates that, the great number of passengers are dominantly destination to the southern part of Thailand when compared with the other parts and most of them are tourists from Europe, Japan, Thai wan, and Hong Kong respectively. Moreover, from the "Thai Ways" publications, the flights to and from southern part of Thailand have generated the most profitability.

❖ To support the government tourism policy

From the Thailand's 1999 balance of payment, it can be seen that, Thailand has faced the problem of trade deficit. One solution, the government has to support the tourist industry, to increase more the currency inflow to balance the payment. Every year, a great amount of money inflow to Thailand comes from the tourist sector.

AEROTHAI, as its status as the state enterprise under the ministry of transportation, an investment in airline business, strongly support the government policy to solve the problem of trade deficit.

❖ The integration to the whole aviation industry

Besides its core service of air traffic control, AEROTHAI, however, has already invested in the other related services. These services include the providing communication equipments for air transportation operators at airports in the country & aboard, the design, manufacture and installation of customized communication equipment, the provision of consultancy and training in air traffic control, aeronautical telecommunications and engineering, as well as the installation & maintenance of communications equipment for domestic and international authorities.

So, to further integrate into the whole of aviation business another section we focus on is the airline operation.

Propose of the Research

This research purposes to study the feasibility of the Aerothai's project to establish an airline in Thailand.

Scope of the Research

The feasibility study to set up an airline in Thailand for Aerothai focuses on the domestic market. The routes of flight are destination only to the airports through out Thailand.

The Research Procedures

The research procedures are categorized into 3 phrases

The project feasibility study, based on :

- ❑ *The Market Feasibility Study :*
  - The SWOT analysis
  - Location analysis
  - Targeting customer & segmentation
  - The market situation study
  - Marketing mix
- ❑ *The Engineering Feasibility Study :*
  - Identify routes of flight
  - Identify schedules
  - Identify type of aircraft
  - Fleet planing
  - Cost Estimating
- ❑ *The Financial Feasibility:*
  - Budgeting
  - Source of fund
  - Cost estimating
  - Cash flow
  - NPV
  - IRR

Research Schedule

Procedures	2001			
	July	Aug	Sep.	Oct.
1. Market Feasibility Study				
2. Engineering Feasibility Study				
3. Financial and Economic consideration				
6.Sumarize				
7. thesis Write up				
8.Final examination				

Benefits of the Research

The feasibility study for setting up an airline in Thailand of Aerothai plays a major role as a for project investment's decision making. It envisions the company in many aspects before justifying to go into a new business of airline industry.

CHAPTER 2

LITERATURE REVIEWS

2.1 Introduction

The first step of strategic management is the step of strategic analysis, which includes internal and external analysis.

In term of internal environment analysis, " the internal contexts can be the tangible and intangible resource possessed by firms and how distinctive core skills and capabilities are developed. It is the ability to nurture and develop strategically relevant internal skills and capabilities that generate competitive advantage.(Ellis and Williams, 1995) The organization's competitive position must be clarified in relation to the market place and leading competitors.

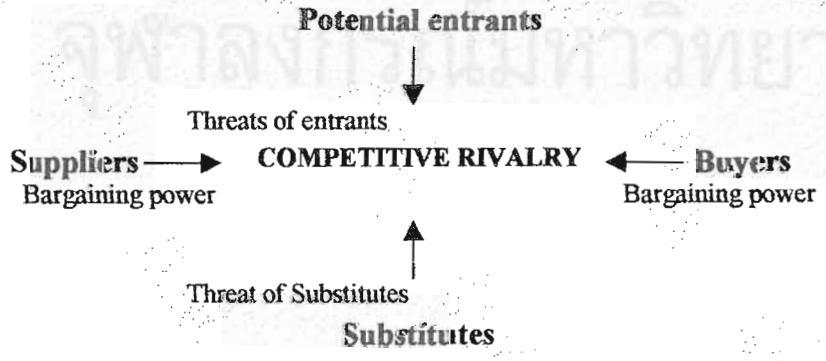
For external environment analysis, an organization's marketing environment is defined by Kotler (1991) as being " made of actors and forces that affect the company ability to develop and maintain successful transactions and relationships with its target customers." The key component of the organization's task in order to analyze external environment including markets, customers, competitors, suppliers, distributors and facilitators. These tasks can be applied by using Porter's five forces competitors analysis.

2.2 Porter's five forces analysis

The porter's five forced analysis approach can be included as a principle from in order to examine the forces that influence the organizations. This approach comprises the threat of entry or barriers to entry, the extent of competitive rivalry, the treat of substitutes, the bargaining power of suppliers:

Suppliers can be more powerful if they are under the conditions as follows:

1. There are only a few suppliers,
2. No substitutes for the supplies they offer
3. Suppliers' prices from a large part of the total costs of the organization, and
4. A supplier can potentially undertake the value-added process of the organization.



2.2.1 Threat of new entrants :

There are seven majors of barriers to entry. These include economic of scale, product differentiation (brand name), capital requirements, switching costs, access to distribution channels, cost disadvantages independent of scale, and government policy.

2.2.2 Intensity of rivalry between existing competitors:

In fact, some markets are more competitive than others. The intensity of rivalry will be greater if:

1. The equal size of competitors are seeking dominance,
2. Product homogeneity requires activity to maintain share,
3. High fixed costs arouse price wars to maintain capacity,
4. The market life cycle is in the mature stage,
5. New inflows capacity have created excess capacity, and
6. High exit barriers in terms of legal constraints exist such as high cost non-preferable plant and equipment, emotional equipment.

2.2.3 Threat of substitutes:

Substitutes do not entirely replace existing products but reduce the costs of producing the same product or introduce new technology. As a result, the key issues that should be analyzed are

1. The possible threat of obsolescence,
2. The ability of customers to switch to the substitute,
3. The cost of providing some extra aspect of the service that will prevent switching, and
4. The likely reduction in profit margin if price come down or are held.

2.2.4 Bargaining power of buyers:

Buyers mean the customers of organization. They will have more bargaining power under the following conditions:

1. If buyers are concentrated and there are few of them,
2. If the products/services from the organization are undifferentiated,
3. If backward integration is possible, and
4. If the selling price from the organization is unimportant to the total costs of the buyer.

2.2.5 Bargaining power of suppliers:

1. There are only a few suppliers,
2. No substitutes for the suppliers they offer
3. Suppliers' price from a large part of the total costs of the organization, and
4. A supplier can potentially undertake the value-added process of the organization.

2.3 SWOT Analysis

SWOT is an acronym for an industry's strengths and weaknesses and its environmental Opportunities and Threat. It is a study of organization resources and capabilities that assess the industry's strengths and weaknesses and scans the external environment to identify both opportunities and threats. This analysis provides management with a critical view of the industry's internal and external environments. It is useful in evaluating the industry fulfillment of its basic mission.

Warwick manufacturing Group 1999 advises some suggestions as to what to look for the final SWOT analysis as:

2.3.1 Strengths (Positive Internal Analysis)

- What are the firm's distinctive competencies and how well do these translate into competitive advantage?
- Is acknowledged as market leader?
- How resilient is the firm to competitive the pressure?
- How do the customers perceive it?
- How innovative are the products?
- Is the technology proprietary/home grown?
- Are the financial resources adequate?
- Does the firm have well conceived area/Functional/SBU strategies?
- Is there a cost disadvantaging; economics of scale?
- Is there a quality advantaging?
- Are the management skills proven in this area?
- Others

2.3.2 Weakness (Negative Internal Analysis)

- Is there no unique or distinctive competencies or competitive advantage?
- Does the firm have no clear strategic direction?
- Is the firm vulnerable to new competition?
- Does the firm have a poor image or reputation in the eye of the customer?
- Are the marketing stills below average?
- Is the firm falling behind R&D
- Is the product range too narrow or too broad?
- Does the competition all access to same technology?
- Is there insufficient finance to fund new strategies, R&D, etc.?
- Are facilities obsolete?
- Is management poor/inexperienced?
- Others?

2.3.4 Opportunities (Positive External Analysis)

- Is there potential for market growth?
- Is there potential to serve new customer groups, markets or market segments with existing products?

- Can new/enhanced products be launched?
- Is there potential for diversification?
- Is there complacency/lack of capability amongst competitors?
- Others?

2.3.5 Threats (Negative External Analysis)

- The market growth slowing?
- What is likelihood of new competitors entering the market or a ground in competitive pressure?
- Is there a growth in substitutes?
- Is the firm vulnerable to recession?
- Is the government likely to take unfavorable action (policy, regulation or new legislation?
- Is the power of customer & suppliers growing?
- Are customer tastes changing due to social/demographic change?
- Others?

From reading many texts and articles, It can be summarized that the concept of SWOT analysis in several point of view as follows:

Johnson et al., "SWOT analysis can be simply understood as the examination of an organization's internal strengths and weaknesses, and its environments, opportunities and threats. It is a general toll designed to be used in the preliminary stages of decision making and as a precursor to strategic planning in various kinds of applications"

We strongly agree with Johnson et al., we believe that when correctly applied, it is possible for AEROTHAI to get an overall picture of its present situation in relation to its customer and competitors. An understanding of the external factors, (comprised of threats and opportunities), coupled with an internal examination of strengths and weakness assists in forming a vision of the future.

Bartol et al.(1991) suggested that "SWOT usually reflect a person's existing position and viewpoint, which can be misused to justify a previously decided course of action rather than used as a mean to open up new possibilities. It is important to note that sometimes threats can also be viewed ass opportunities, depending on the people or groups involved. There is a saying, a pessimist is a person who sees a calamity."

We also strongly agree with Bartol et al., in the point that sometimes threats can also be viewed as opportunities. Therefore, we should determine opportunities and threats carefully. It should be recognized that opportunities and threat are not absolute. What might at first seem to be an opportunity may not emerge as such when considered against the resource of the organization or the expectation of the society. The greatest challenge in the SWOT method could properly be to make a correct judgement that would benefit all the industry.

Glass, N.M.(1991) listed that " A SWOT analysis look at future possibilities for the institution through a systematic approach of introspection into both positive and negative concerns. It is a relatively simple way of communicating ideas, policies and concerns to others. It can help administrators to quickly expand their vision.

Probably the strongest message from a SWOT analysis is that, whatever course of action is decides, decision making should contain each of the following elements: building on strengths, minimizing weaknesses, seizing opportunities and counteracting threats."

From Glass's words, we believe that a SWOT analysis can be an excellent, fast tool for exploring the possibilities to build on strengths, minimize weakness, seize opportunities, and counteract threat for analysis the feasibility study to set up an airline of AEROTHAI.

Moreover, in order to be most effectively used, a SWOT analysis needs to be flexible. Situation change with the passage of time and an updated analysis should be made its simplicity. SWOT is neither cumbersome nor time-consuming and is effective because of its simplicity. Used creatively, SWOT can form a foundation upon which to access the critical success factors of AEROTHAI to establish a new airline.

2.4 Project investment Decision

Businesses, from time to time, need to make substantial investments. It is often the case that the returns from the new investment will be small relative to the size of the investment, such that several years will elapse before the repay the investment. Long term investment in projects and life cycle costs of capital assets are the subject matter of project investment decision. The ways in which investment decisions of this nature are made and methods of life-cycle costing should be explained. First, the notion of payback will be briefly considered. The remainders is concerned with the discount cash flow techniques; the concept of present value, annual value and internal rate of return.

2.4.1 Payback

The notion of payback is simple, and therefore, popular. How long will it take to repay an initial single sum investment? If machine x cost 1000$ and earns net annual benefit of 250$ per year, the payback period is four years, its payback period is only three years, so, despite the higher price it would appear to be a better investment.

This of course, is too simplistic: it ignores interest rates. If, in the above example, the interest rates are 10% then, for machine x, the sum of 100$ interest(10% of 1000$) must be paid out of the first year's benefit of 250$. This leaves 150$ toward paying back the initial investment of 1000$. So, at the end of the first year the sum to be paid back will be 1000-150=850$.

The interest payable in the second year will be 10% of the sum owed, that is 10% of 850$=85&. This leaves 165$ available for paying off the initial investment.

For many managers payback is an invaluable concept; as a matter of policy, if the payback period is short, three years or less, then the investment will be worthwhile. For longer term investments a more sophisticated approach is needed. This is where discounted cash flow should be used.

2.4.2 Discount cash flow

Discount cash flow(DCF) techniques allow proper consideration of all these questions. These techniques all rational comparison to be made between alternative investments projects. The technique are generally used for long term projects, long term meaning anything from two years to 120 or more.

The underlying premise of DCF is that money will not usually be invested in a project unless that project earns more than if the money were earning steady interest in a Bank. A project is said to have negative value if it earns less than if the capital simply earned interest in a bank; a positive value if it earn more. The higher the interest rates the more likely it is that a project will have a negative value.

DCF form an important part of an investment decision analysis; it does not predict the future! Once a project is underway the outcome may well vary from predictions. It is unlikely, for example, that interest rates will remain constant over the duration of the project; which, amongst other things, make estimating an interest rate of the DCF analysis so interesting!

2.4.2 Internal rate of return

Another approach to comparing alternative investment projects is by means of their internal rate of return. The internal rate of return(IRR) of a project is a rate of interest at which the NPV is zero. This also known as the yield. An investor might decide that the highest yield should be the determining criterion in project selection, rather than NPV. In most cases, the IRR of a project can not be calculated save by an interactive method. However, it can be found by piloting value of NPV against interest. There are two ways of looking at the IRR.

If $1 million is borrowed at 16.5%, the benefit over the six years will completely repay both capital an interest.
The accumulative benefits over the 6 years at an interest ate rate of 16.5% would equal the sum obtained by investing 1 $ million in a bank to earn 16.5% over the six years period.

In the case, which an investment project has an initial cost followed by a uniform series of annual payments in the IRR can be determined quite easily.

Feasibility Study

According, D.S. Cliflon, D.E Fyffe,(1997) Project Feasibility study is the tool for making a decision on the project. There are many aspects of the studies those are marketing, engineering, financial and economics, government law and regulations and Environment.

However, for this research, we focus only on the three aspects of the following:

- **Marketing Feasibility Study.**

  This aspect has studies the markets and their competition. This part is very crucial because it is the base for further study in other aspects. The market information us the demand forecasting that is useful for the engineering and financial study.

  In the market .study, SWOT analysis and other tools are important. After the SWOT analysis, we got the critical success factors that will lead the company to success in the new business.

- **Engineering Feasibility Study**

  The engineering feasibility use the data from the marketing study for fleet planning, aircraft selection, cost calculation as well as the fare rate. So, the fleet planing is very important to identify the aircraft that suitable to the fleet. How the more effective is the fleet planing is the effective of cost saving. As a result, the project will feasible with the considerable payback.

- **Financial and Economics Feasibility Study**

  After the cost and revenue estimated, then, we can calculate for the cash flow, net present value. After we got the net present value at different discount factor then, comes the internal rate of return. IRR will illustrate how this project valuable at the end of its life. Moreover, to ensure the feasibility of the project, sensitivity on demand change should be analyzed to identify the minimum demand that the project will feasible.

  After the three aspects of the feasibility study are analyzed, then we can summarize that the project of AEROTHAI to invest in the airline business are feasible or not.

CHAPTER 3

MARKETING FEASIBILITY STUDY

3.1 Introduction

The marketing feasibility study, is the studying of the current market situation, competitive analysis, the market segmentation and targeting as well as the marketing mixes.

At first step, the study started with the SWOT analysis to identify the potential of the company as well as the opportunities and threats in the present environment to establish a new airline in Thailand.

Secondly, it was the location analysis. The research outcome represented that among the three parts including the North, South and North-East of Thailand, the south has been voted for the location based, using the criteria in table below:

Criteria	North	South	North-East
➢ Demand	0	+	-
➢ Level of competitive	+	-	+
➢ Government Regulation	-	+	-
➢ AEROTHAI Branches	0	+	-
TOTAL	0	2	-2

Remark : The details illustrated in the next section

From the location analysis, we got the location based. Then the current market situation has been analyzed. Market segmentation and the target market have been found out. Our target markets are the foreign tourists markets that mostly come from Europe and Asia respectively.

When the customers have been identified, the last stage was the marketing mix which Showed our product concepts in terms of :

- Product,
- Price
- Place
- Promotion.

3.2 SWOT Analysis

The feasibility study for setting up the airline of AEROTHAI has started with the SWOT analysis. This analysis aimed to identify the strengths, weaknesses, opportunities and the threats of the company to establish an airline.

To identify the SWOT, we have to collect the data from many units some were collected from the department of aviation of Thailand, airlines and the International Civil Aviation Organization. The others came from the aviation journals. These data were analyzed, then discussed by the company's management team, the SWOT analysis of AEROTHAI was summarized below, in figure 2-1.

Strength	***Weakness***
- Cos t effective - Strong relationship with airlines and Department of Aviation Thailand. - Corporate expertise in the related aviation services - Skilled human factor in aviation services - Branches almost all over the airports in Thailand - Ensure safety of the flight - Good Financial Position	- Less experience in airline industry - The status of state-enterprise
Opportunity	***Threat***
- The high growth rate in air transportation - The government's policy for Free Flight - Thailand Tourism Authority's policy to Promote the tourism in Thailand - Thai Ways new policy's to share some domestic route to other private sectors instead of monopoly - Changes in people way of life to shorten the time for transportation - The great amount of tourists inflows to Thailand	- Risky, because of the high investment for the new aircraft and technologies - High competitive with the existing airlines and the new entrances - The non- recovery from the economic crisis - The non-stable political

Figure 3-1 SWOT analysis
Source: sumarize from the company's management team

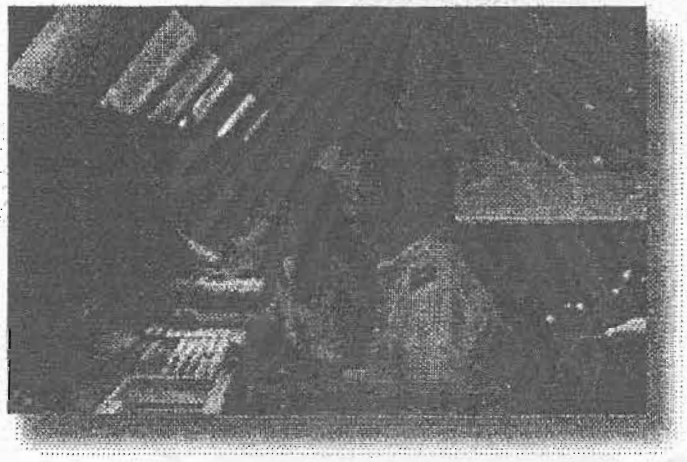
Strength

- **Cost effective:** resulted from the available technology, equipment, routing, human resource expertise especially the omitted flight charge that directly reduce the operation cost.

- **Strong relationship**: with the Department of Aviation Thailand as well as Thai Airways due to its status of the state enterprise under the transportation ministry.

- **Strong relationship**: with the airlines in all over the world. Some of the airlines, which used our services, are our shareholder.

- **Corporate expertise:** in the related aviation services. The 50 years experience in air traffic control and related service enable the company expertise in aviation services.



- **Skilled human factors:** in aviation services

- **Branches:** almost all over the airports in Thailand that will easier the company to make the airline operation.

- **Ensure safety of the flight:** due to its main service of air traffic service provider in Thailand

- Good Financial Position : The company has a good financial position that can reduce the risk for the investment in the new business. If the financial position is bad, the company not only unable to investment in the new one but also can not survival.

	2000 (Million Baht)	1999 (Million Baht)
Income	2,030.14	1,817.66
Income from operation	91.95	89.11
Flight Charges	6.47	9.43
Equipment & Maintenance	2,128.57	1,916.21
Recovery of labour an overheads	4.80	5.94
Total income from operation	2,128.57	1,916.21
Interest received	4.80	5.94
* Gain on exchange rate	6.67	8.04
Other income	19.27	16.65
	2,159.33	1,946.85
Income paid/collected by airline	2.63	(26.198)
Total income	**2,161.97**	**1,920.66**
Expenditure		
Operating expenditure		
Staff costs	1,271.30	1,089.97
* * Maintenance of asset & equipment	85.65	72.33
Lease of circuit	22.68	29.252
Depreciation	253.25	219.42
Provision for doubtful debts	11.62	13.79
General administration expenses	47.47	52.81
Other operating expenses	288.37	324.44
Total operating expenditure	1,980.36	1,802.05
Other expenditure		
Interest paid	181.60	118.60
Total expenditure	**2,161.97**	**1,920.66**

Figure 3-2 Profit-loss account of AEROTHAI, as at 30 September 30,2000 and 1999

Source: Annual report 2000

Weakness

- **Less experience:** in airline industry. Although the company has an experience in air traffic control service but the company has less experience in this business. So, the company has to gain more information before an investment in the in business.

- **The status of state-enterprise:** make its difficult for investment in a new business.

Opportunities

- **The high growth rate in air transportation:**

  From the statistic of International Air Transportation Association or IATA in 1997, the international passengers who use the airlines that are the member of IATA increase from the prior year 6.8%, as 412 Million people. While the quantities of goods have the growth rate 11 %, as 14.7 Million tons. However the economic crisis in the late of 1997 in Asia Pacific strongly deteriorate the growth rate of goods and passenger in this region. IATA has revised the prediction of the growth rate of the world's air transportation that from 1997-2001 the growth rate of air transportation will increase 5.4% annually compare with the existing of 6.6%, whereas that of Asia Pacific 4.4% compared with the existing 7.7%.

  Especially, the statistics from Thailand Tourism authority, which indicates that, the great number of passengers are dominantly destination to the southern part of Thailand when compared with the other parts and most of them are tourists from Europe, Japan, Thai wan, and Hong Kong respectively. Moreover, from the "Thai Ways" publications, the flights to and from southern part of Thailand have generated the most profitability.

- **The government's policy for Free Flight:** The Government has plan to deregulate the airline from the monopoly by the Thai airway to the private to support the real competitive as well as follow the trend of aviation deregulation all over the world.

- **Thailand Tourism Authority's policy :**to Promote the tourism in Thailand. Every year a number of tourists in Thailand generated the great amount of foreign currency. So, the Tourism Authority of Thailand plan to promote the Thai tourism to attract the more foreign currency.

- **Thai Ways new policy's:** to share some domestic route to other private sectors instead of monopoly. This outsourcing policy will enable the Thai airways to cut the considerable cost.

- **Changes in people way of life:** to shorten the time for transportation. It can be seen from figure 3-2 that, the passenger in year 2001(Jan-June) was increase when compared with those in the year 2000(Jan-Dec)

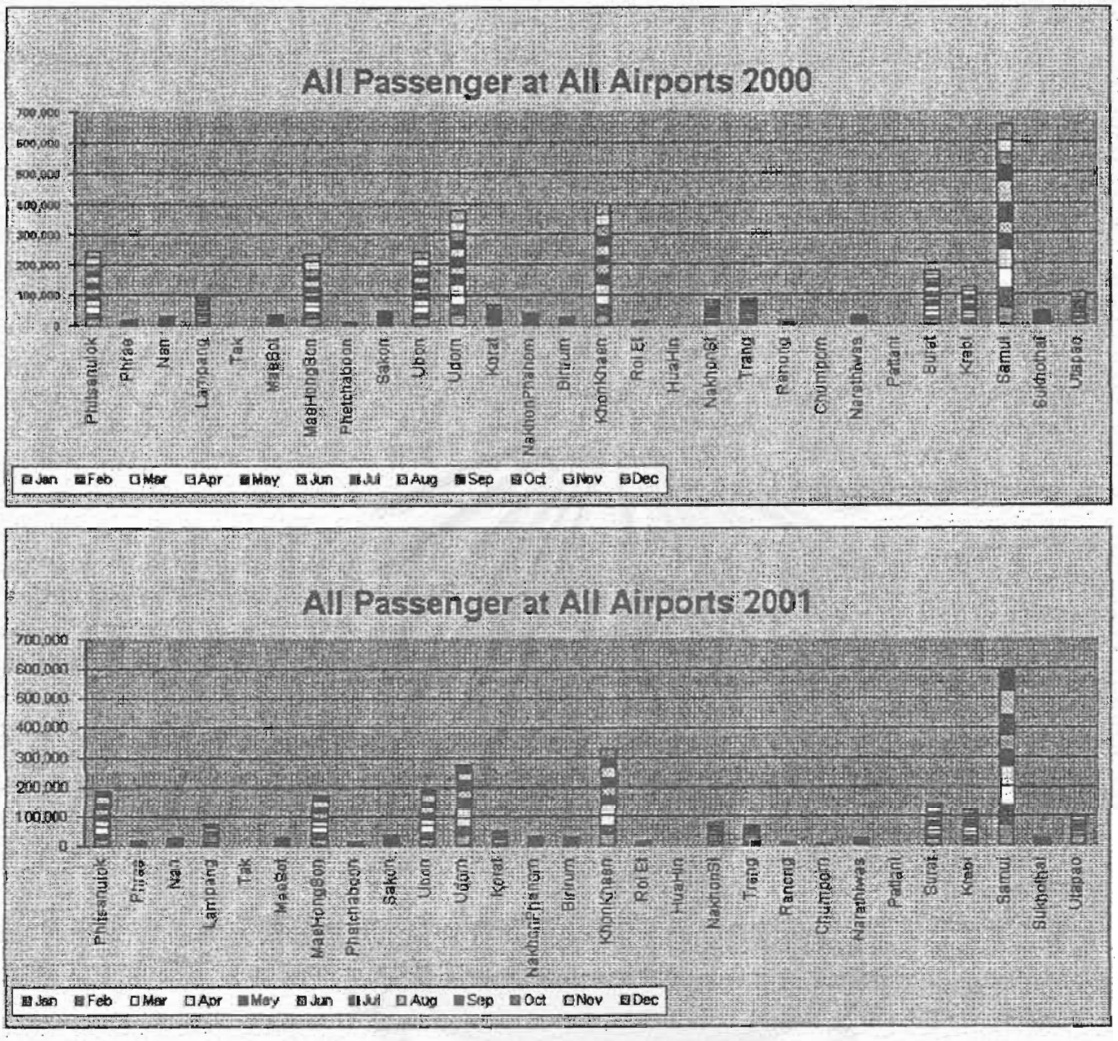


Figure 3-3 The increase in air transportation from many airport in Thailand in the year 2000(Jan-Dec)-2001(Jan-Jun)
Source: Department of aviation Thailand

- **The great amount of tourists inflows to Thailand:** especially in the southern part of Thailand. The detail illustrated in figure 3-3

Threats

- **Risky :** because of the high investment for the new aircraft and technologies, aircraft purchasing, flight crew training, airport supporting cost and so on.

- **High competitive :** with the existing airlines and the new entrances. Because of the deregulation policy that increase the competition, the airlines which lose their competitive edge could not be survival. The new one, which has the more potential, will go instead.

- **The non-stable political policy:** Because the political situations in Thailand are not stable. The policies have been changed all the time due to the different political party who has the different policies. This non-stable policy will lead the company's project in trouble.

From the SWOT analysis, we got our critical success factors which are:

- The demand of air transportation that continue to growth every year (from the statistic of International Air Transportation Association
- The deregulation in aviation policy
- The government policy to support the Thailand's tourism
- The trend of globalization The company expertise in aviation industry
- The reliable safety air transportation service
- The cost effective
- The brand name

3.3 Location-Based Analysis

Because of the high investment in this industry, to establish a new airline in Thailand, it is very important to analyze for the most appropriate operating zone and route of flights that expected to be the one that generates the most advantages over the others zone.

The location analysis was categorized into the Northern, the Southern and the North-Eastern of Thailand, since, these three parts excepts Bangkok play a major roles in the domestic flights in Thailand. In this analysis, statistics and trend predictions are brought about as an aid tool for defining the routes and operating zone.

The analysis starts with the distribution of visitors in each part of Thailand, by using the data from TOT in the year 2000.

Part of Thailand	Total	Thailand	Foreigner
Northern	11,711,718	8,749,118	2,962,600
Southern	12,933,073	6,046,969	6,886,104
North-East	13,753,569	13,126,984	626,585

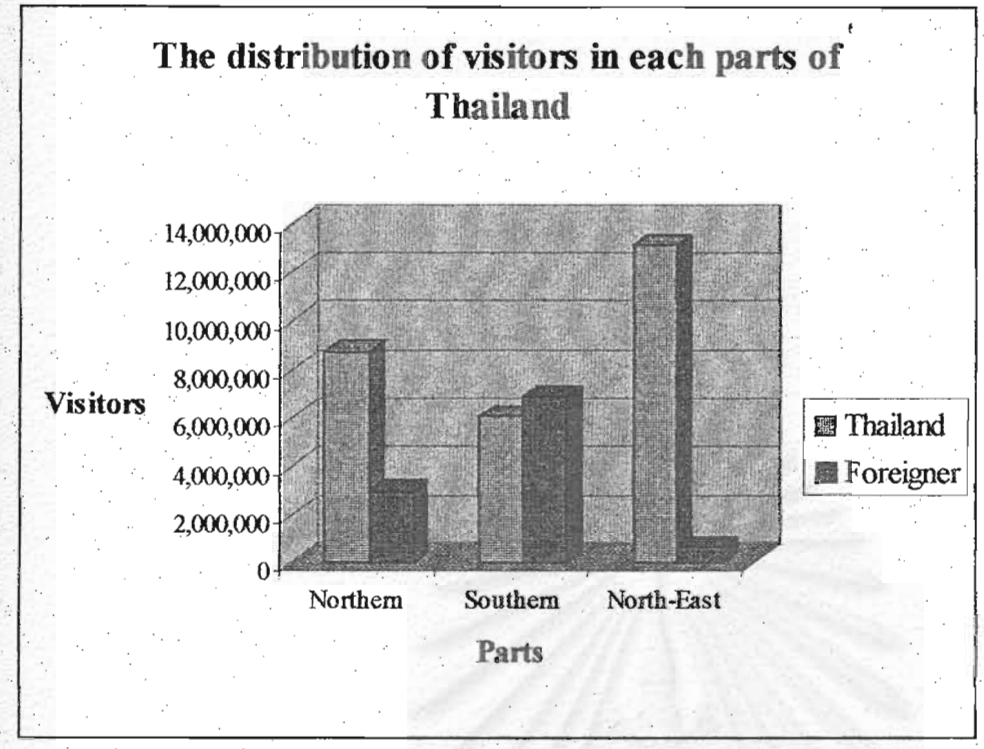


Figure 3-4 The distribution of visitors in each parts of Thailand
Source : The Tourism Authority of Thailand

In 2000, it can be seen that total visitors are mostly in the north-eastern of Thailand and most of them are the Thai people. It can be explain that these great amounts may come from the Thai people who come back to their native hometown in their long holidays.

Among the three parts, the southern part had the most foreign visitors about 6,046,969 people follow with those of the northern about 2,962,600 people and the northern east about 626,585 people. The considerable different of these figures represented that the foreigners prefer to visit the southern part of Thailand rather than the others.

However, to analyze the data in more deep details it is better to categorize the possible locations into group, then study the opportunity and threat within each part, after that compare them with each other, finally, the most appropriate site location (hub)has to be identified.

Here, below are the location analysis separated into 3 parts including, the northern part, the southern part and the north – eastern part of Thailand.

3.3.1 Northern Part of Thailand

- **Chiang Mai**

Chiang Mai is the province located in the northern part of Thailand. Because of its beautiful territory attractive climate, every year, there are some tourists not only

domestic but also the foreign come to visit Chiang Mai. To visit, Chiang Mai, There are many modes of transportation, including air, train, bus, car and others

Mode of transport	Thai (Visitors)	Foreign (Visitors)
Air	240,525	507,717
Train	546,648	450,221
Bus	505,668	266,803
Car	703,782	134,327
Others	5,134	939

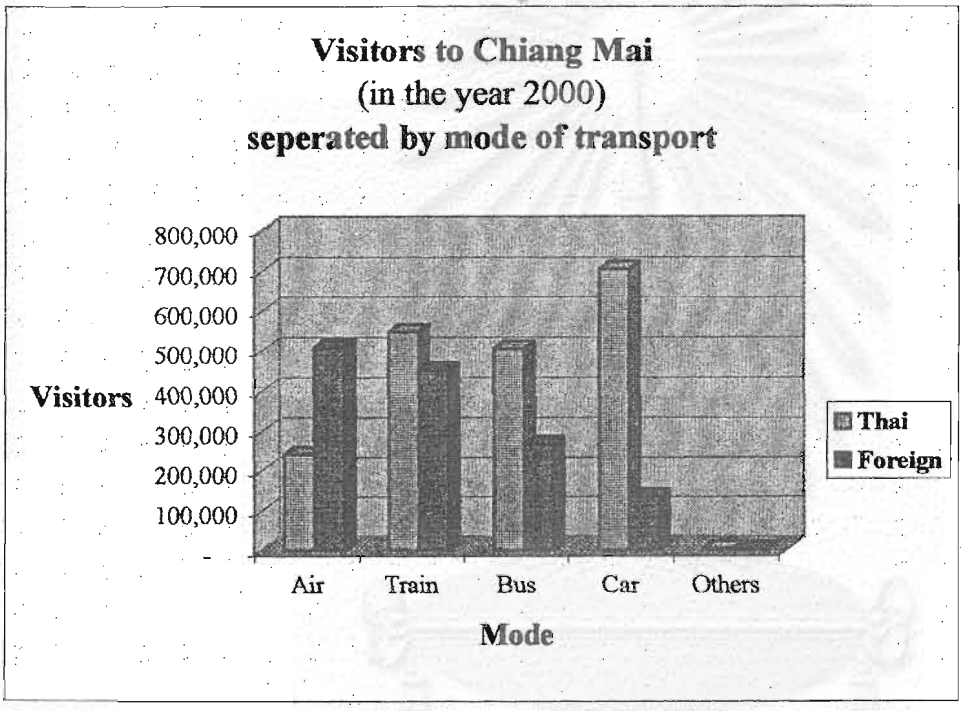
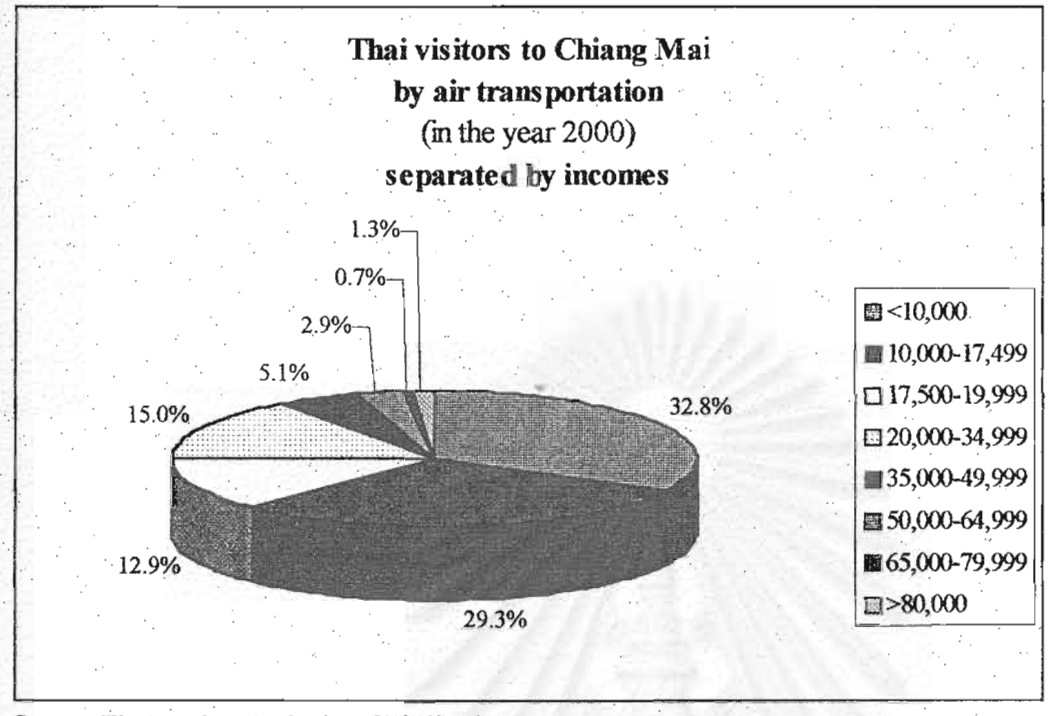


Figure 3-5 Visitors to Chieng Mai separated by mode of transport
Source: The tourism Authority of Thailand

From figure2-3, it can be seen that most of the visitors went to Chiang Mai by car, bus, train and air respectively. Explained that, in Thailand the roads to the northern are quite good, furthermore the flight fee to Chiang Mai is rather expensive compared with other modes about 1, 870 Baht for economic class (Thai airways). So, Thai people prefer to reach there by car or by bus rather than by air.

From figure 2-3, most of the air transportation users are the foreigners about 507,717 people, 111.09% greater than those of occupied by the Thai people (240,525). In short, the foreigners who have the more purchasing power and have the limited time for transportation play a major role in the air transportation.

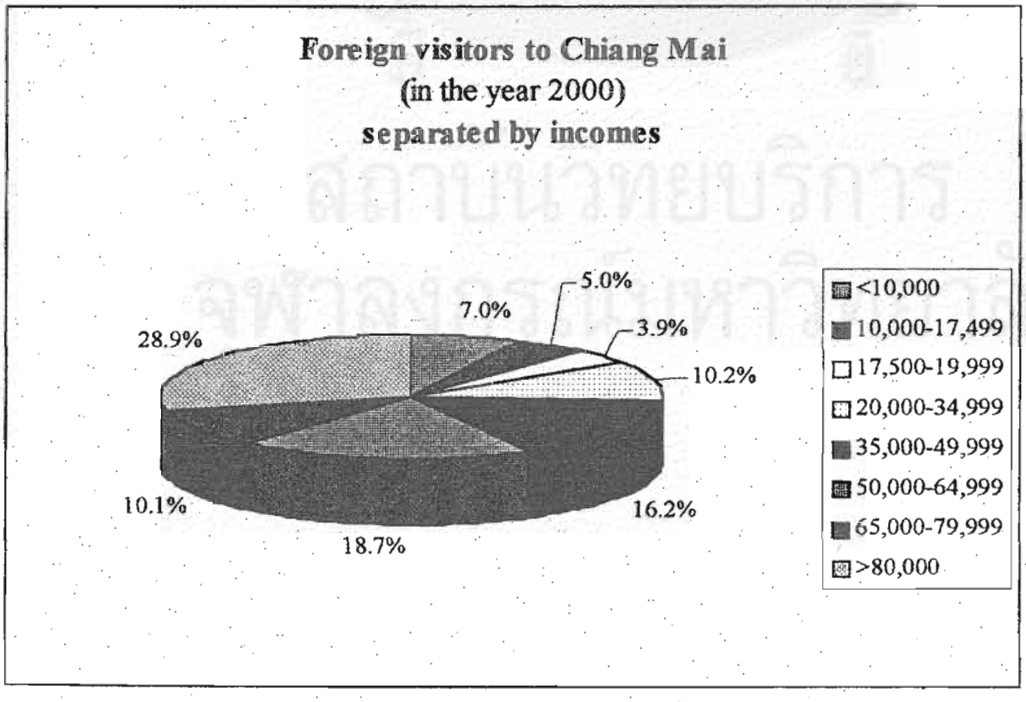
Figure 3-6 : Thai Visitors to Chiang Mai by air, separated by incomes



Source: The Tourism Authority of Thailand.

Separated by incomes, it can be seen that most of the Thai visitors who occupied air transportation to Chiang Mai had the average incomes <10,000 Baht equal to 32.8% of the total visitors then 10,000-17,499 Baht equal to 29.3% respectively. In short, the Thai visitors who engage the air transportation have the average incomes in the range of 10,000-17,499 Baht.

Figure 3-7 Foreign visitors to Chiang Mai separated by incomes

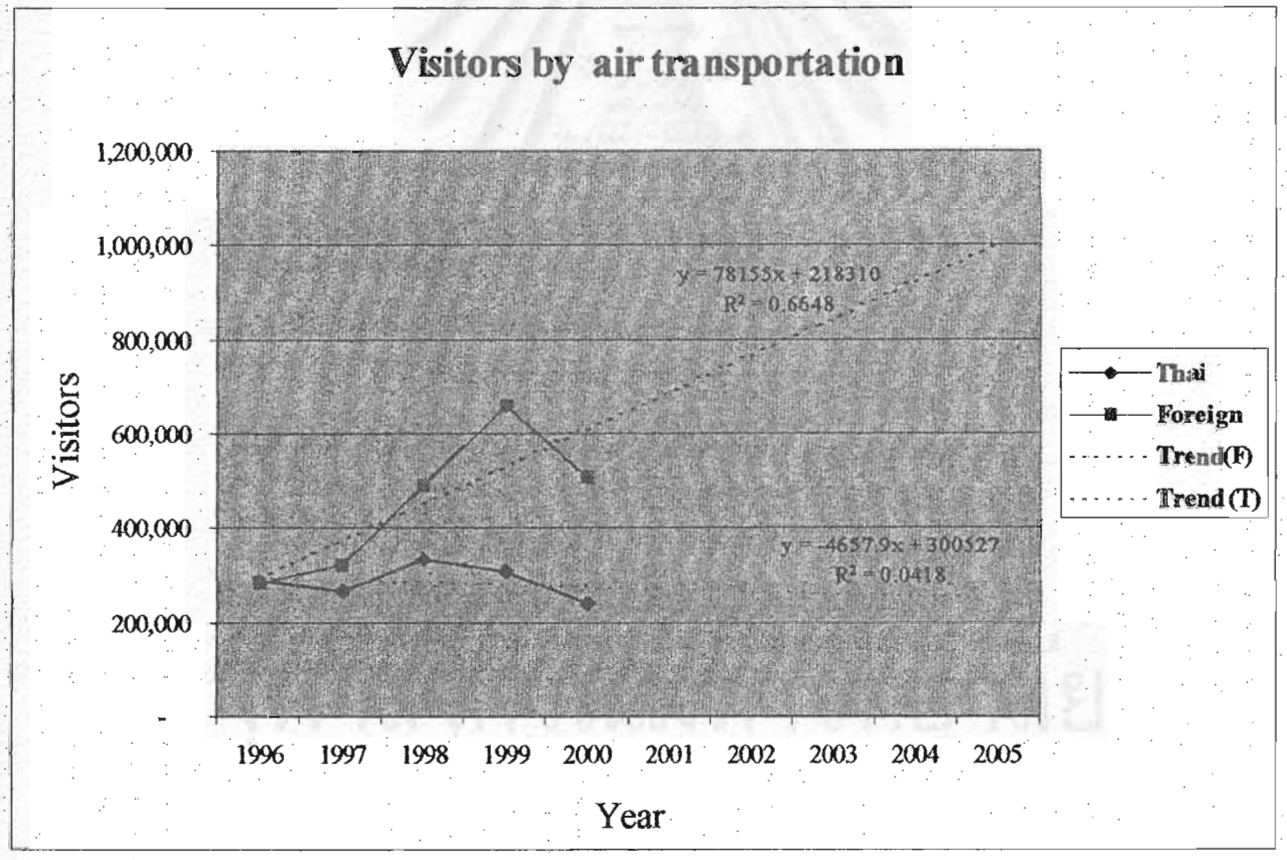


Separated by incomes, it can be seen that most of the foreign visitors who occupied air transportation to Chiang Mai had the average incomes >80,000 Baht equal to 28.9 % of the total foreign visitors then 50,000-64,499 Baht equal to 18.7% respectively. That mean, the foreign visitors who occupied the air transportation had the average incomes 50,000 Baht or more.

From the analysis above, it can be summarized that the visitors to Chiang Mai who selected the air transportation as a mode of transport are mostly the foreigners who had the more purchasing power and had a limited time for travelling. To ensure this hypothesis, table below identifies the data of the visitors categorized into Thai and foreign visitors, in the past five years (1996-2000)

Visitor	1996	1997	1998	1999	2000
Thai	285,759	265,036	332,523	308,925	240,525
Foreign	284,933	321,554	492,133	657,537	507,717

Figure 3-8 the visitors by air transportation
Source :TAT



From figure3-8, it can be seen that the trend of the foreigner who use air transportation are increasing and expected to be the passenger increasing about 78,155 persons per year if the started passengers in year 1 is 218,310 person. Moreover the R^2 is equal 0.6648 that mean the fit is quite good.

In contrast, on the Thai visitor site, it is obvious that the trend of the visitors engaging the air transportation is continued to decrease. This may resulted from the Thai people try to reduce their expenditures because the flight fee to Chiang Mai is quite high. There are only Thai Airways that privatizes the schedule flight to Chiang Mai. Another reason may come from, the easiness to approach the northern part of Thailand by car.

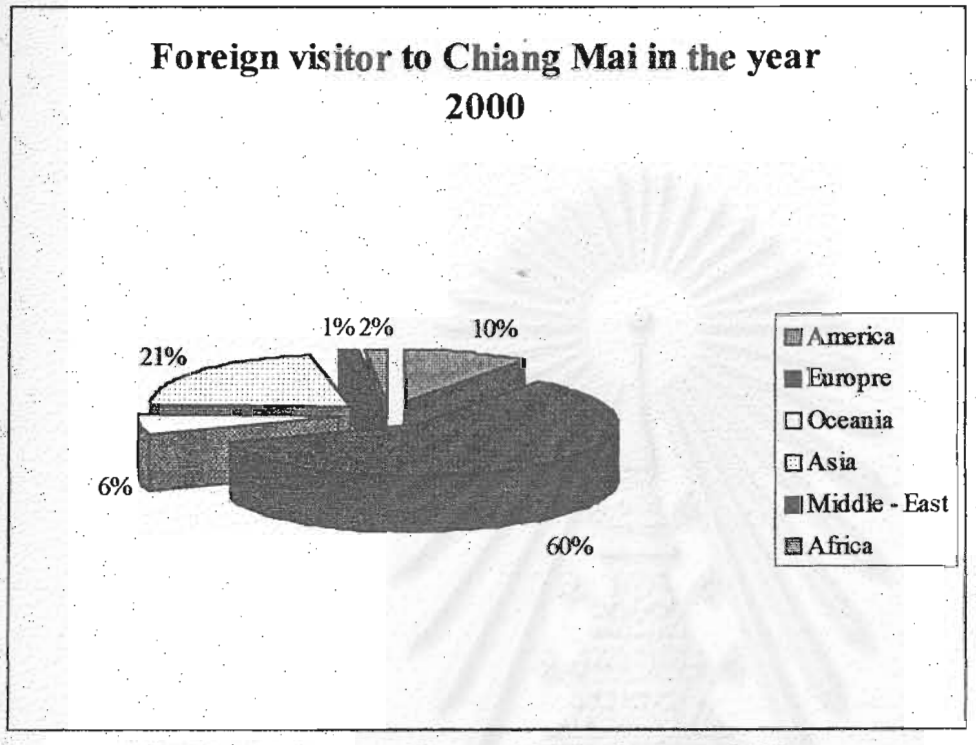


Figure 3-9 Foreign visitors to Chiang Mai in the year 2000
Source: TAT

In the year 2000, most of the visitors came to Chiang Mai are came from Europe about 60% and from Asia 21% of the total visitors.

3.3.2 Southern Part of Thailand

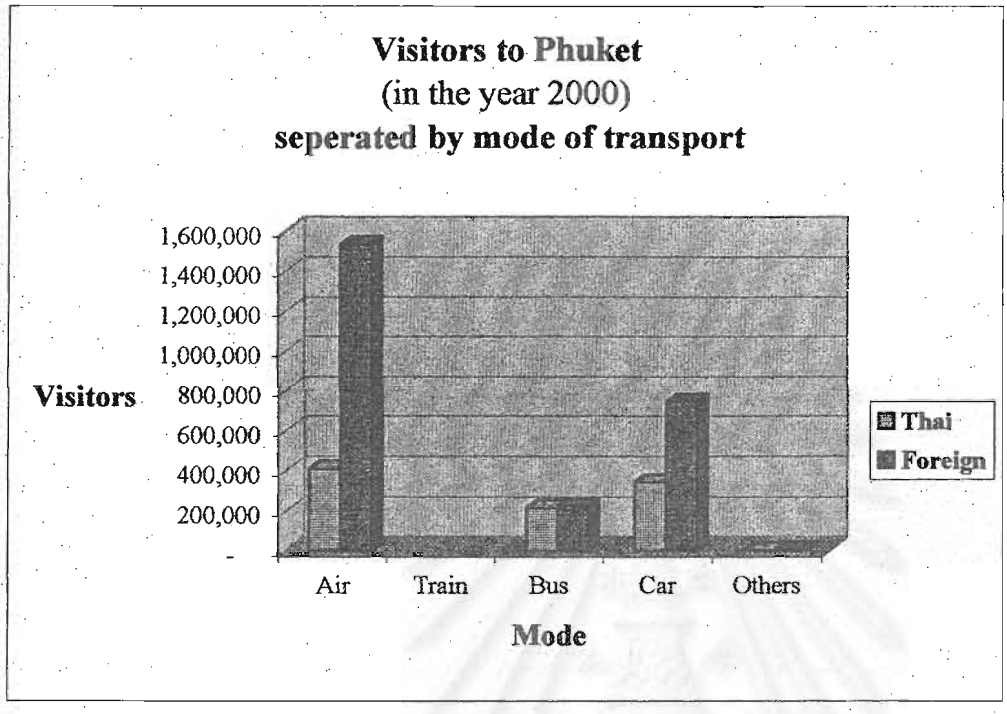
- **Phuket**

Phuket is a province located in the Southern part of Thailand. Every year, there are some tourists came to visit Phuket on their holiday. Due to its attractive island territory, amount of foreign currency pouring to Thailand especially in the summer.

Year 2000				
	Thai	**(%)**	**Foreign**	**(%)**
Air	406,576	11.75%	1,530,916	44.25%
Train				
Bus	212,062	6.13%	222,981	6.45%
Car	341,171	9.86%	739,089	21.36%
Others	1,284	0.04%	5,494	0.16%

Figure 3-10 Visitors to Phuket (in the year 2000) separated by mode of transport

Source : TAT



From this figure, it can be seen that the amount of foreigner visitors came to Phuket were higher than those of the Thai visitor, and most of them about 44.25 % of the total passengers preferred to go to Phuket by plane rather than by bus or car. This may resulted from the lack of train destination to Phuket as well as the roads to the southern part of Thailand were dangerous and difficult for driving a car.

It was surprising that only 11.75% of Thai people went to Phuket by the airplane whereas 44.25 % were the foreigners. Look at the total visitors to Phuket, it was about 2,498,480 person it was about 160% higher than those of the Thai visitors. In summary, we can say that most of the tourists to Phuket are the foreigner and occupied the air transportation as a mode of traveling.

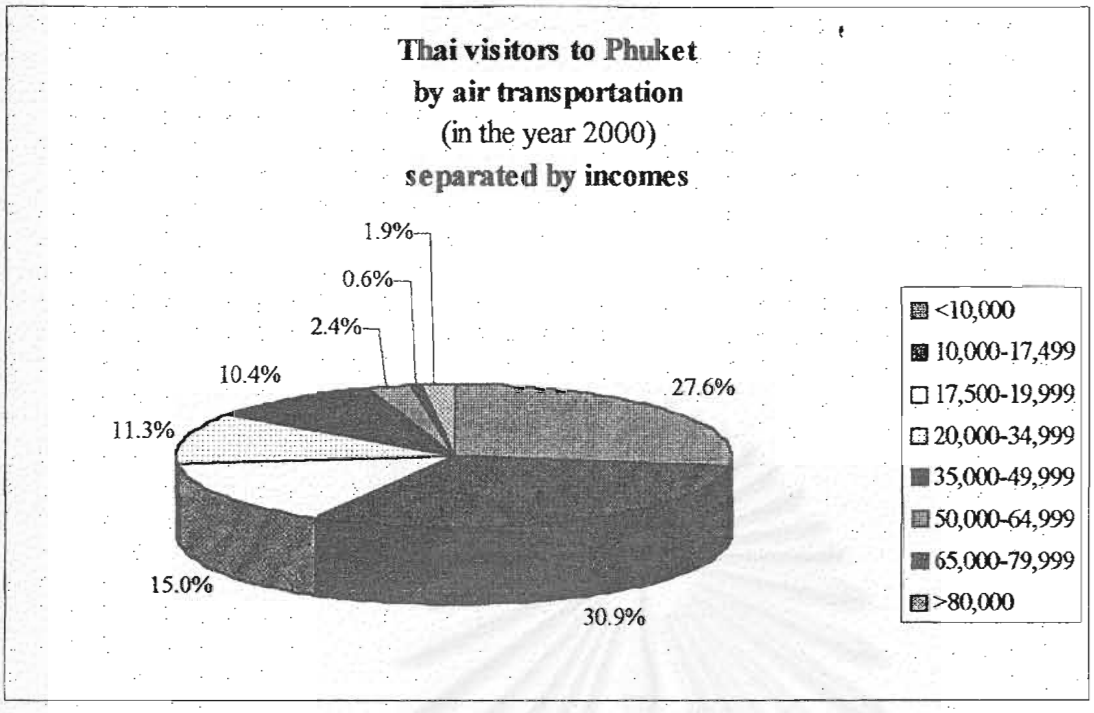
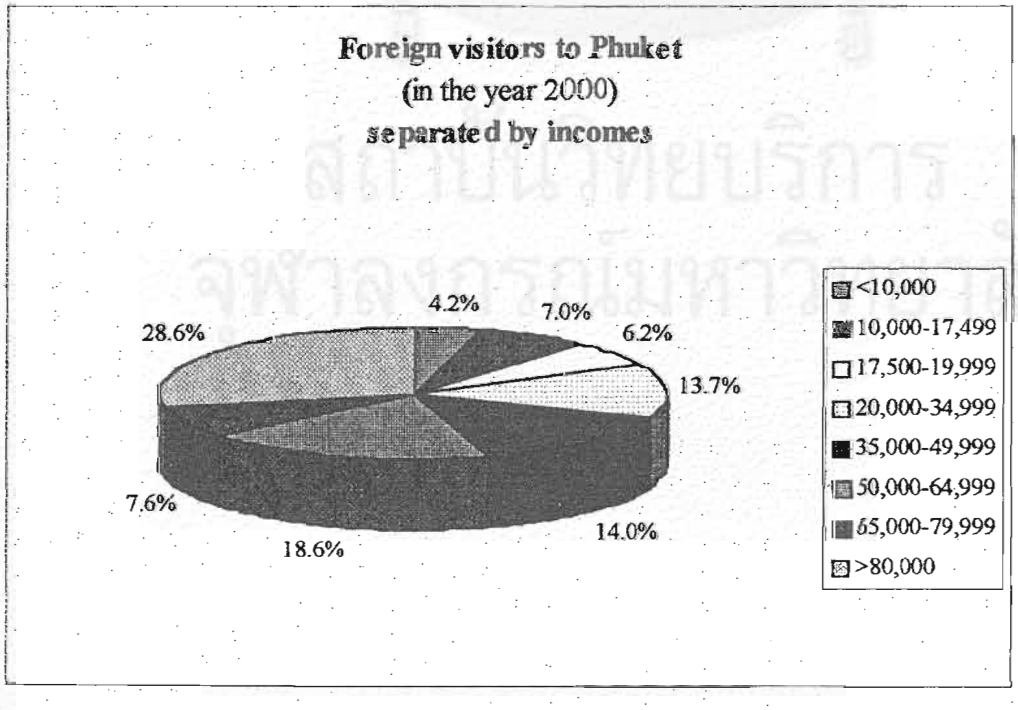


Figure 3-11 The Thai visitors to Phuket by air transporatation (in the year 2000) separated by incomes

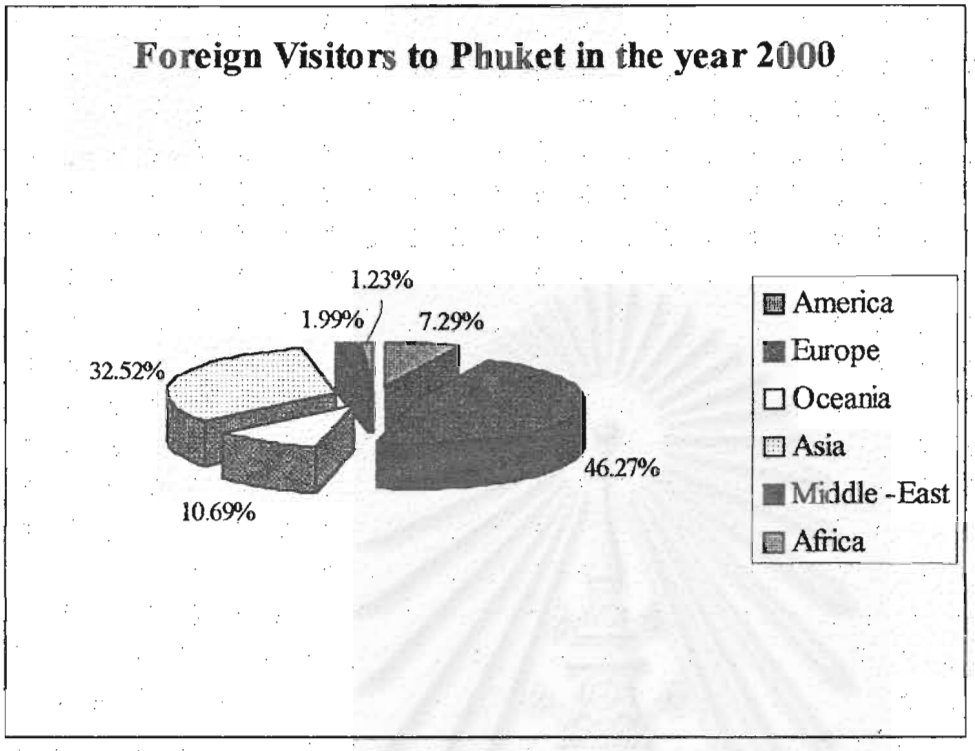
Source: TAT

The average incomes of the Thai visitors who occupied the air transportation in the year 2000 were about 30.9 % for the Thai visitors whose their income are 10,000-17,499 and 27.6% for the visitors whose incomes are <10,0000 and 15.0% for income about 17,500-19,999.

Figure 3-12 The Foreign visitors to Phuket by air transporatation (in the year 2000) separated by incomes



From figure3-12, look at the foreign visitors, who use the air transportation mode were mostly had an average income higher than 80,0000 Baht, about 28.6%.



In summary, at the southern part of Thailand, if we select phuket to be a center or hub the target customer should be the foreigners whose their incomes are quite high. From the statistics in the year 2000, in the figure 2-10, Most of the foreign visitors came from the Europe about 46.27% and from Asia about 32.52%.

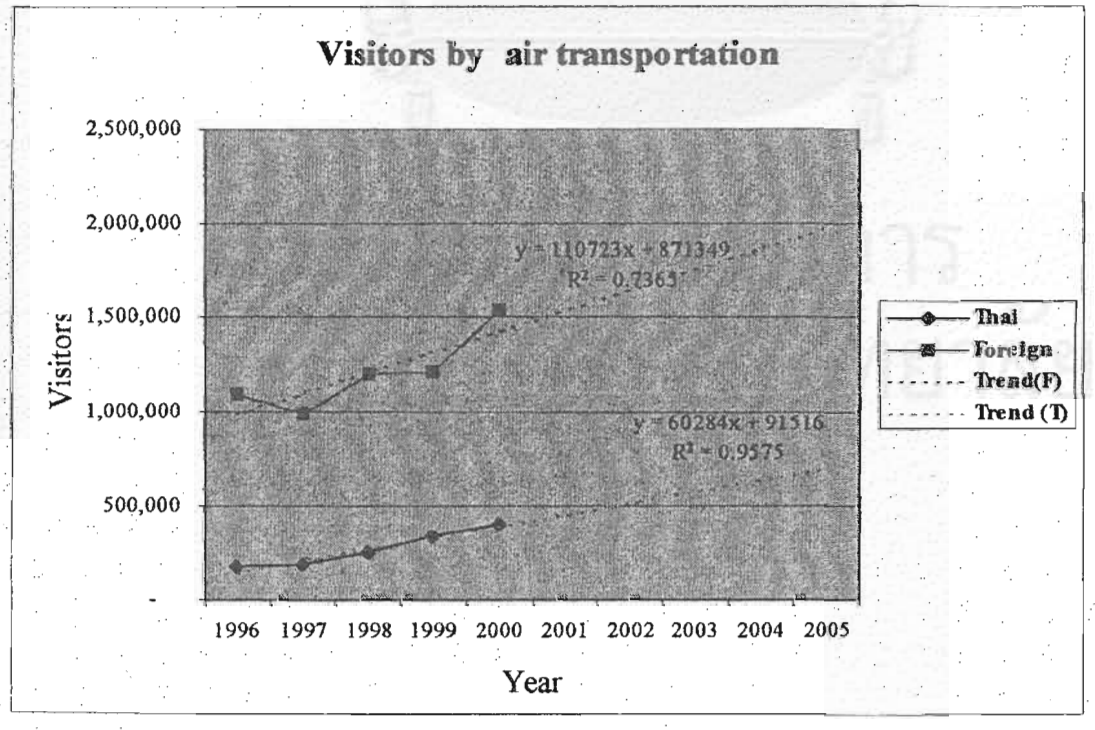


Figure 3-13 five years statistics of the air transportation mode (1996-20000)

Source : TAT

The past five years statistics (1996-2000) of the amount of peoples who use air transportation mode represented that, most of the visitors were the foreigners and the trend was going to increase, from figure2-11, it mean, there will be 110,723 passengers increasing in the next year. If the first year started with 831,349 passenger, it expects to be 110,723 passengers increasing in the next year, about 12.7% increasing. The R^2 which was equal to 0.7365 represented the reliability of the fit.

For the Thai visitors, who occupied the air transportation mode, the trend was increasing but fewer sharps than those of the visitors. It expected to be 91,516 passengers increasing per year.

By the trend analysis, it can be summarized that the trend of the air transportation's passengers to phuket are going to increase in both the Thai and foreigner side, but in the foreign side, it increased more shaper than those of the Thai side.

3.3.3 Northeastern Part of Thailand

- **Ubon**

Ubon is the province located in the northeastern of Thailand. It is not only the center of the northeastern region, but also is the door to the Indo-China. Moreover, it becomes the economic center in this region. There are the good infra-structure for approaching Ubon. Visitors can go there by bus, car, train or by airplane. People went to visit Ubon in different purposes, some for tour, for business, seminar and so on. Although, when compared with the other parts of Thailand, amount of visitors came to visit Ubon is quite little, especially by the air transportation, the users were limited in the foreigners and business people. But in the future, the trend will considerably change due to the government policy to open Ubon to Indo-China.

Mode of transport	Year 2000			
	Thai	(%Share)	Foreign	(%Share)
Air	54,396	5.48%	5,078	0.51%
Train	239,569	24.12%	1,308	0.13%
Bus	186,071	18.73%	22,714	2.29%
Car	475,363	47.86%	8,707	0.88%

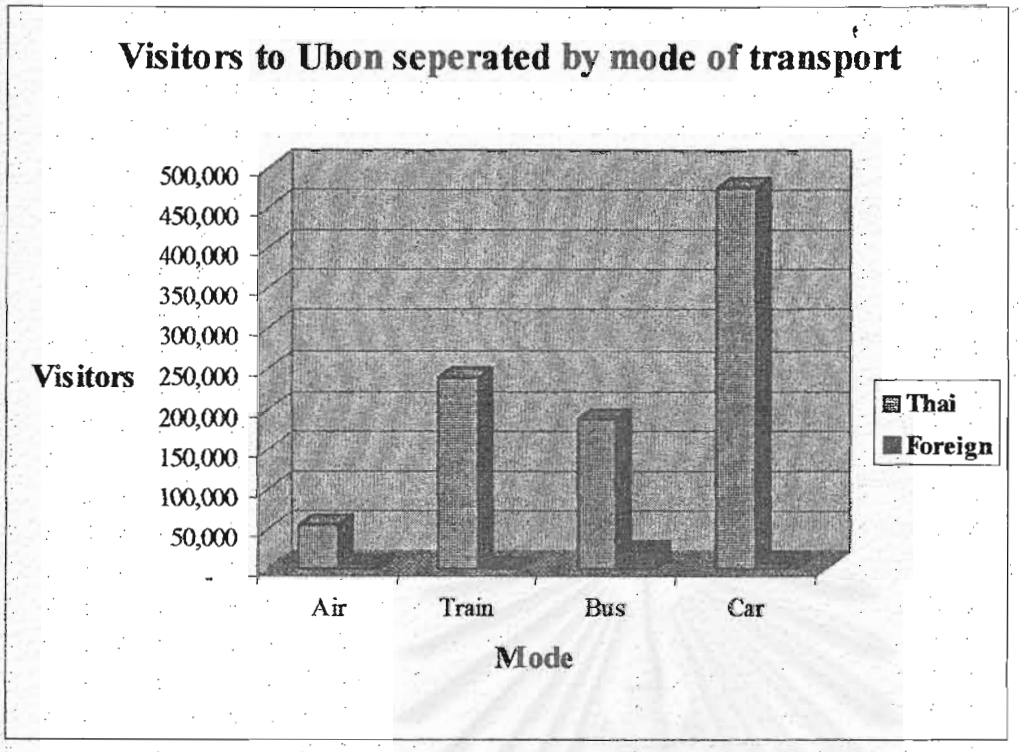


Figure 3-14 Visitors to Ubon, separated by mode of transport

Source : TAT

This figure absolutely identified that most of the visitor had preferred to visit Ubon by car rather than by air or train. And Thai visitor played a major role in any mode of transports. In another word, most of the Ubon visitors are Thai people. As said before, that the roads to Ubon is quite good. The number of visitors in each mode of transport were quite different between those of the foreigners and Thai. For air transportation, it was only Thai visitors 5.48 % and 0.51 for foreigners. For car, it was 47.86% Thai people and only 0.88 % for foreigners.

Figure 3-15 Thai and Foreign visitors to Ubon by air transporatation by purposes

Source : TAT

It was 32.6% of the Thai visitors played a major role in the total visitors. They came to visit Ubon for travel and 25.5 % for business. For the foreigners, it was 34.6% of the total visitors came to visit Ubon for travel and 25.0% for the business purpose.

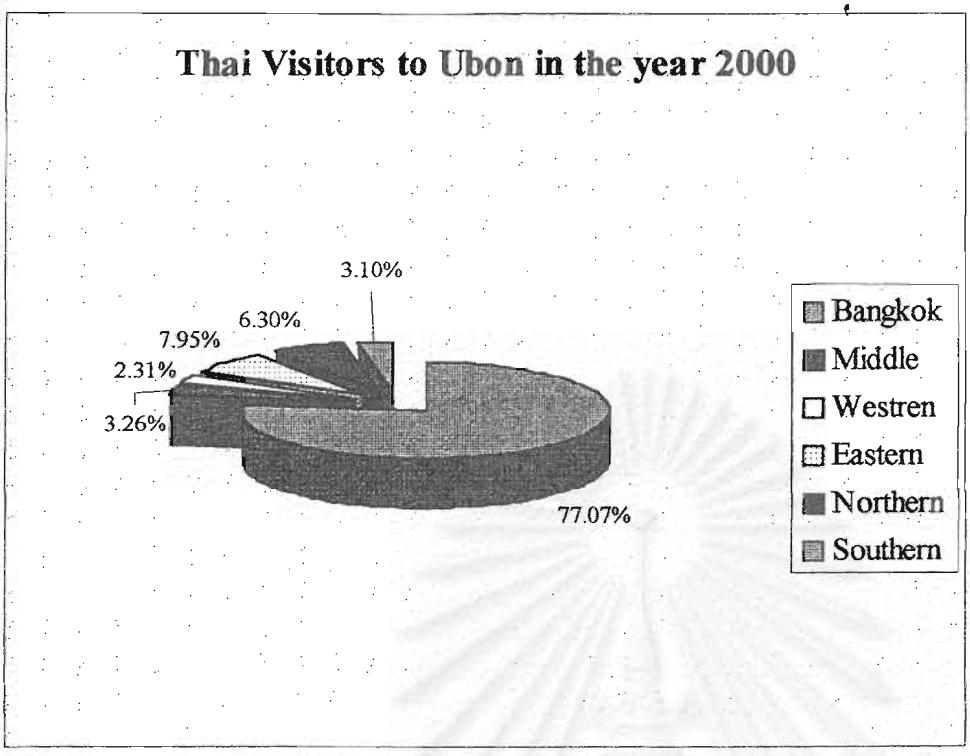


Figure 3-16 Thai visitors to Ubon in the year 2000
Source: TAT

In the year 2000, The Thai visitors came from the different parts of Thailand, mostly from Bangkok about 77.17%. The others are from the eastern, the northern, the middle, the southern and the western of Thailand respectively.

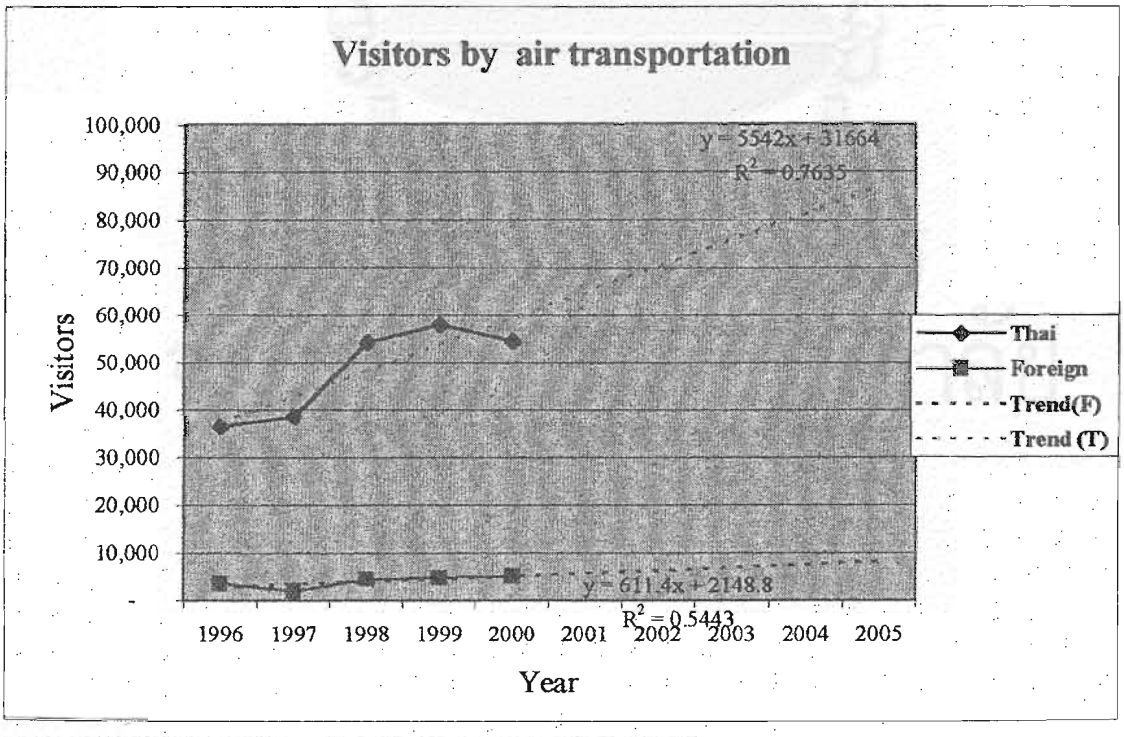


Figure 3-17 :Total visitors by air transportation mode

From the five years statistical data, the amount for the Thai trended to increase. But, it was decline in the year 2000. However, from the trend prediction, the total amount trended to growth with the slop of 5,542 passengers expected to increase in each year. This slope was quite little when compared with those of Phuket and Chaing Mai.

For the foreign site, the trend prediction represented that the growth is very little, only 611.4 increasing passenger in next year if the started amount in this year equal to 2,149 persons.

3.4 Market Situation

The trend of the tourism in the Southeast Asia is now continuing to growth considerably. Because of the economic situation, that offers the tourists from Europe, America and other parts of the world to have the more purchasing power for traveling in this region due to the gain in foreign exchange.

Thailand one of the countries in the Southeast Asia, So, the tourist market in Thailand is continuing to growth until the neighbors still have the uncertainty in economic, politic and social, that is the great advantage for Thailand.

The big tourism markets of Thailand are Bangkok and Phuket, because both of them have the most direct international flight arrival.

Phuket was almost the destination of the foreigner that arrival to Thailand. Especially between September and April of the years, there are some problems from the over crowded. In the near future, Phuket will be the door to open to the other neighbors like Krabi or Surat.

The main traffic will come from repeat visitors to Phuket who wish to visit other less crowded, pristine resorts such as Krabi, Ranong, Satun and Nakorn Si Thammarat as complimentary destinations during their stay.

Our airline will initially operate a shuttle service to cover the major resorts in southern Thailand to provide immediate and convenient connections with Phuket International Airport. We plan to distribute the tourist to the others clean and silent, natural beach in the southern part of Thailand like Krabi, Ranong or Trang.

Figure 3-18 : Tourist distribution in the south
Source: TAT

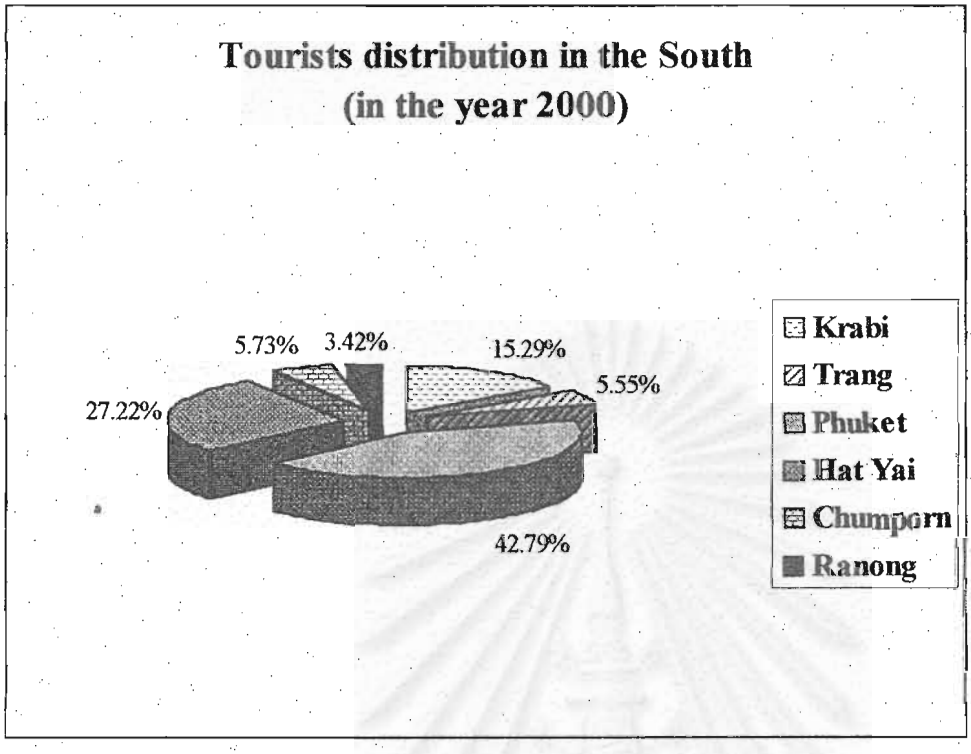


Figure 3-18 illustrated the distribution of the tourists in the southern part of Thailand, it can be seen that about 42.79 % of the tourists came to Phuket, the others were destination to Hat Yai and Krabi respectively.

Our airline support the Tourism Authority of Thailand (TAT) policy to distribute the tourists to the other adjacent provinces. The TAT policies try to expand the markets to the cluster of Phuket illustrated in figure to reduce the congestion in the high season of Phuket as well as to keep the ecology in balance.

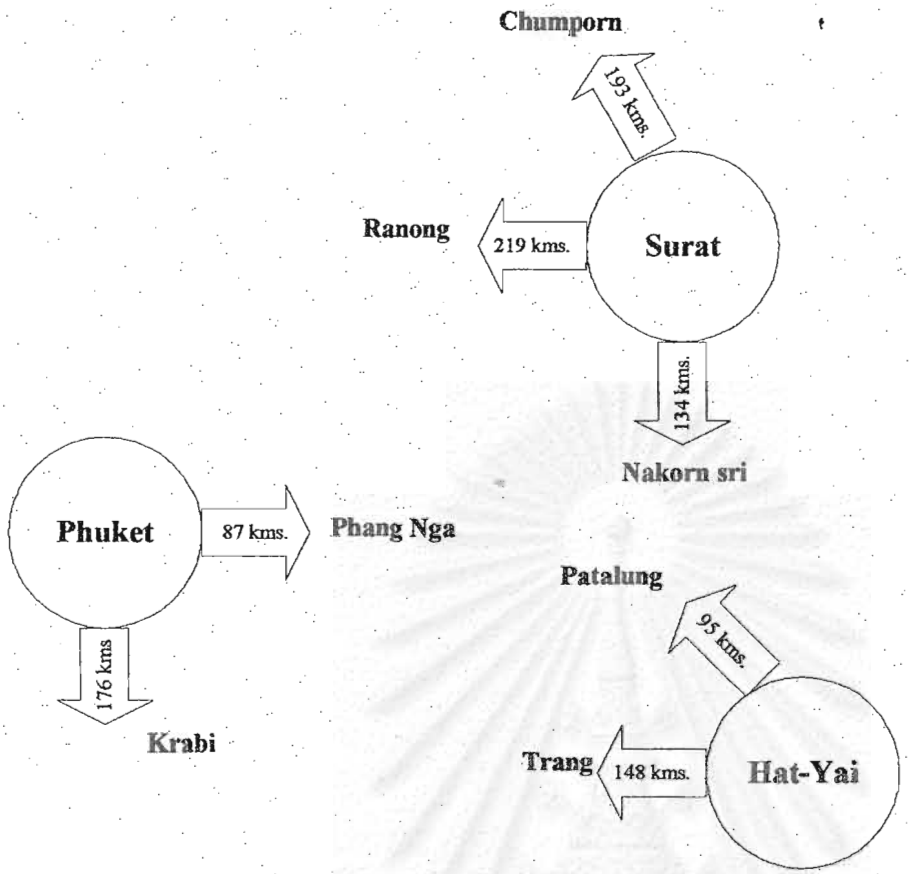


Figure 3-19 :The provinces in the southern parts of Thailand that are the main market and secondary market

Provice	Days of stay
Krabi	4.22
Trang	2.86
Phuket	4.9
Hat Yai	2.03
Chumporn	2.11
Ranong	2.14

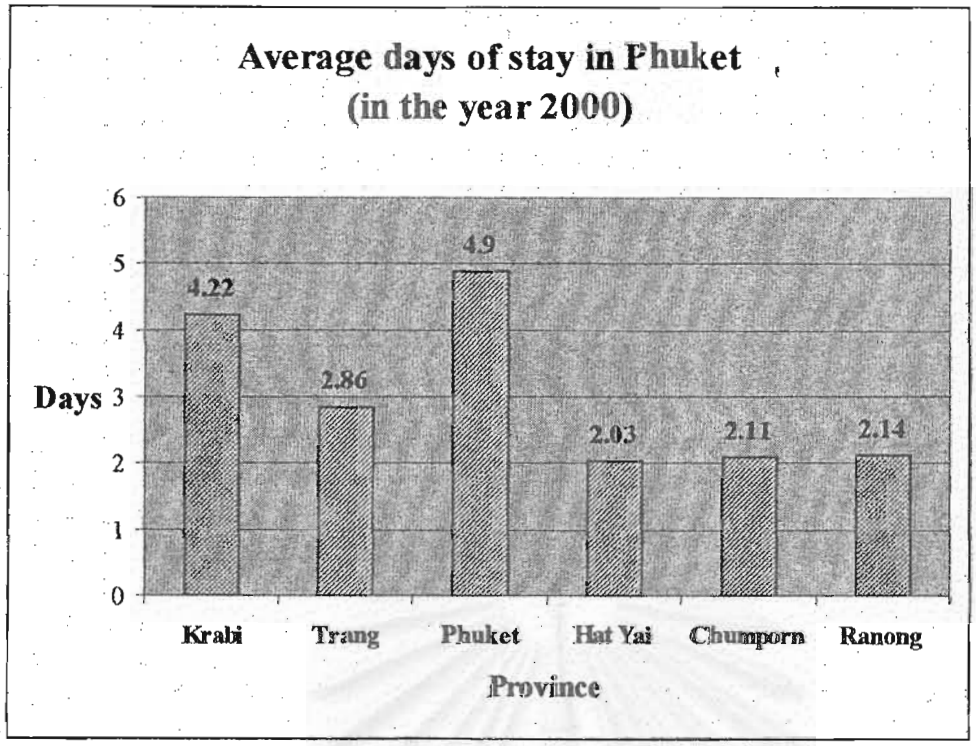


Figure 3-20 Average of days stay in Phuket
Source : TAT

It can be seen that, the average days of stay in Phuket was about 4.9 days in the year 2000 and Krabi about 4.22 days. TAT policies has tried to increased the average days of stay to the cluster of Phuket like Ranong, Chumporn, Trang and other provinces to attract more foreign currency into Thailand. Our airline as well, played a major role to support TAT policies in term of air transportation provider.

3.5 Market Segmentation

Traditionally, airlines have segmented their market on each route by trip propose. Some airlines do this simply by dividing their passengers into business and leisure passengers. Market segmentation in this way is invaluable since the different market segment have different growth rates and respond differently to internal variables such as fare changes or to external factors such as the exchange rate fluctuations or economic recession in a particular country.

Understanding the size and the characteristic of each market segment on each route is essential for forecasting demand, for many aspect of product planing such as scheduling or in-flight service and especially for pricing. Airlines without such detailed knowledge of their markets are likely to get into difficulties when trying to match supply and demand.

In recent years, there has been growing awareness among airline managers that this simple approach to market segmentation based on trip purpose has some shortcomings. First, it tends to place too much emphasis on the demographic and socioeconomic features of the passengers. Age, sex or social class are perhaps less important than appreciating passenger needs and requirements when travelling by air.

Firstly, we segmented the market into the domestic market and foreign market.

Domestic Market

For the domestic market, we segment the market into 2 main groups, including:

- Ω **Tourist:**

  They are:
  - → High income
  - → Normally, the families tours
  - → Both individual and group tour
  - → Long stay
  - → Convenience is the key

- Ω **Business:**

  They are:
  - → High income
  - → The business men
  - → Short stay (1-2 days)
  - → Normally, individual
  - → Punctuality is the key

Foreign Market

For the foreign market, they are the international tourist those by or the individual and tour operators. We segment this market by the residents into 3 main groups.
They are the tourists from:

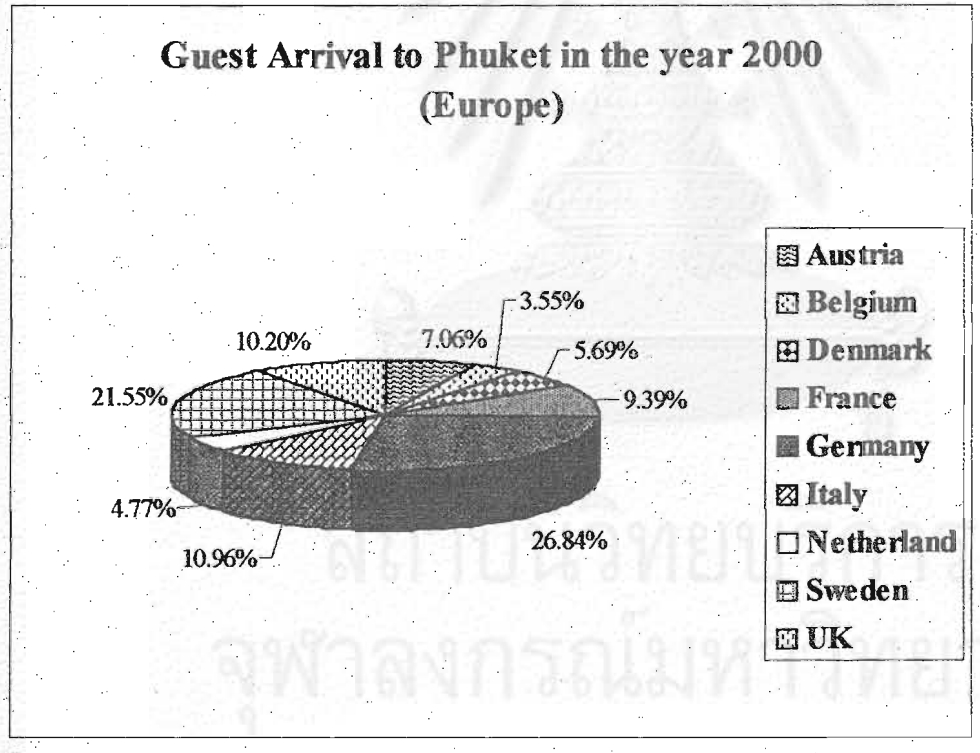
- Ω **Europe**
- Ω **Asia**
- Ω **Oceania**

The arrival tourists to Phuket are mostly those who came from Europe, Asia, and Oceania respectively.

Ω Europe

Nationality	Total
Austria	53,409
Belgium	26,848
Denmark	43,024
France	71,011
Germany	202,922
Italy	82,841
Netherlands	36,048
Sweden	162,933
UK	77,140

Figure 3-21 : The European guests arrival to Phuket in the year 2000



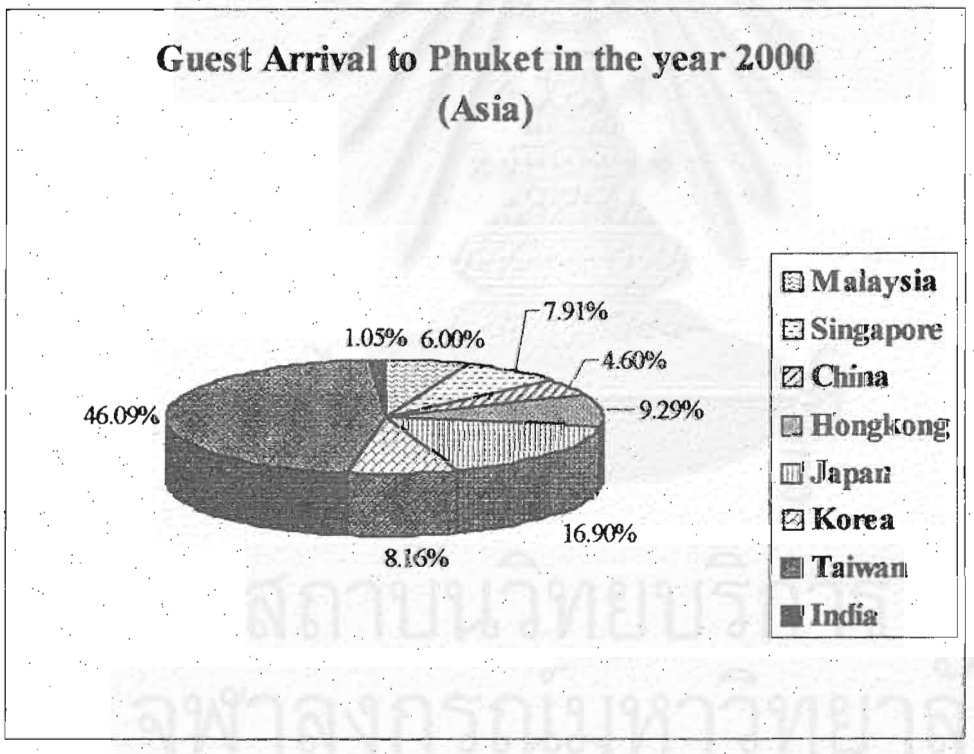
Source :TAT

For the Europe resident, most of the tourists were the German, about 26.84% followed with the Swedish about 21.55% and lastly the Italian about 10.96% of the total tourists depart from Europe to Phuket. It can be summarized that for the European market, Germany and Swedish is the target market. It probably has a direct contact with the airlines from German for the direct flight to Phuket.

Ω Asia

Nationality	Total
Malaysia	48,244
Singapore	63,630
China	36,961
Hong kong	74,704
Japan	135,967
Korea	65,670
Taiwan	370,731
India	8,414

Figure 3-22 : The Asian guests arrival to Phuket in the year 2000
Source : TAT



For the Asian market, tourists from Taiwan dominantly played a major role, from the figure , about 46.09% share of the total tourists in this region. It may result from the high economic growth rate in that country. Tourists from Japan was the second, about 16.90% followed with the tourists from Korea and the Singapore. In short, we could say that for the Asian market, the East Asia is our target market. We have to focus on the flight from those countries zone that are directly to Phuket. Today, there are many flights from China that directly destination to Phuket. It is the great opportunities to collaborate the benefit with those airlines by looking at them as a channel to distribute our services.

Ω Oceania

Nationality	Total
Australia	114,253
New Zealand	23,281

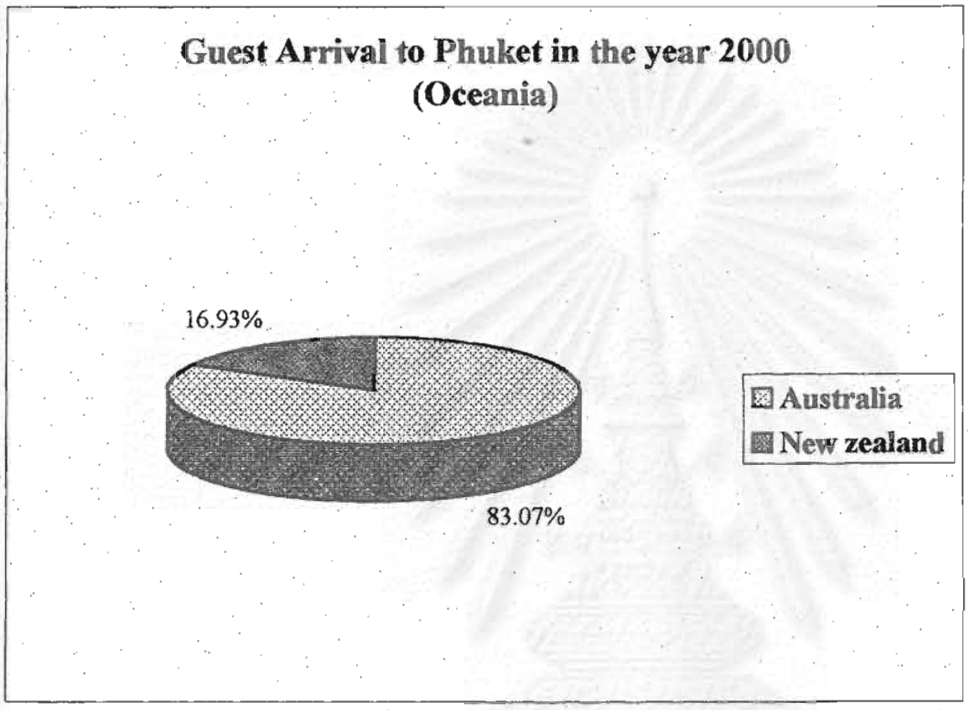


Figure 3-23 The Oceania tourist arrival to Phuket in the year 2000
Source: TAT

The tourists from Oceania ranked the third of the total foreign arrival to Phuket. Most of them about 83.07% were those from Australia rather than those from New Zealand. There have been the direct flight from Perth to Phuket, belonging to the Thai airways and the Quantus airways. It was a good opportunity for our airline to integrate alliance with these airlines to share each others the benefit from the tourist affair.

Target Customer

From the market segmentation, our airline will focus on the foreigner tourist market. Since, it offered the great demand of passengers with the high purchasing power. We defined our customers as the persons who:

- Individual
- Overseas Tour Operators
- Local Tour Operators
- Travel agencies

- Overseas airlines
- National airlines
- Hotels

3.6 Competitors Analysis

3.6.1 The Primary Competitors

→ **Thai Airways**

Thai airways, due to the status of Thai national airline enables its to privatize most of the domestic route in Thailand. Exceptions for some routes that the private sectors have the right to provide the services. There has been the regulation that private sectors unable to same route with Thai airway, the regulation illustrated in the appendix.

However, under consideration of the DOA committee, in the near future, there is a trend of deregulation. Thai airways will continue to carry the passenger to the main destinations like Chiang Mai, Ubon, Phuket and the others may be outsource. This will bring about, the aggressive competition in the airline industries.

AEROTHAI, to establish an airline. Instead of the competitors, we should collaborate with the Thai airways. Since some of our customers, will be carried by the Thai airways to our base of Phuket. The collaboration should be in term of cooperated benefit. The relation between the new airline and the Thai airways should be in the figure

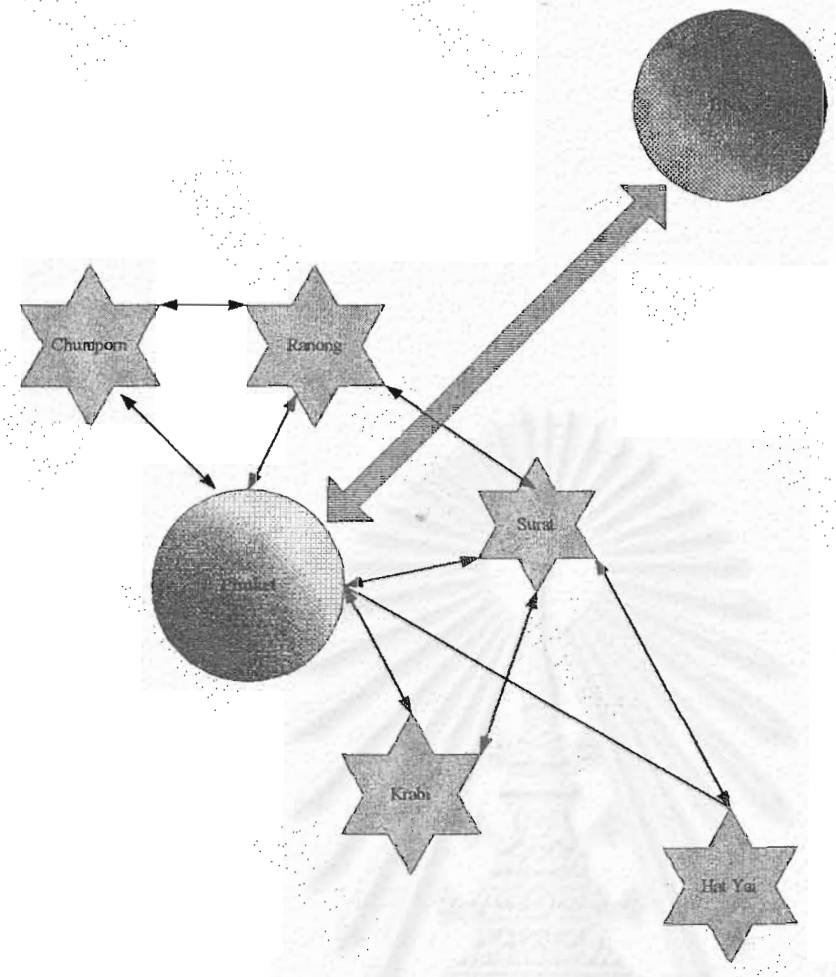


Figure 3-24 : The relationship of the new airline and the Thai airway

Both of the three airlines below are our competitors since:

→ **Phuket Airline**

This airline bases at Ranong, their route of flight are :

Bangkok-Ranong-Bangkok
Ranong-Hat Yai-Ranong
Ranong-Nakorn Sri-Ranong
Ranong-Surat-Ranong
Ranong – Singapore – Ranong
Ranong-Kualalumpur-Ranong

Look at their route of flights and the location base, there are quite different from those of ours. The target groups are also different since, our target customers are the tourists who enjoy swimming, Whereas those of the Phuket Airline are the tourists who prefer to join the Andaman Club in Ranong

→ **Air Andaman**

Air Andaman, the new airline established in the late 2000 by the Thai investors. Not only the same target market, our new airline also has nearly the same operating routes with those of Air Andaman. Because, it was the former one in this business, their brand was more familiar than that of us, especially their name that strongly refers to the "Andaman" travelling by air. It is hard, to compete for the high market share.

Under the strong competition, The first thing for the new airline to do is to formulate the strategy how gain the competitive edge in this industry. The details illustrated in the section of forecasting demand.

Air andaman routing were :

Bangkok – Phuket – Bangkok
Phuket – Krabi – Phuket
Phuket – Hat Yai – Phuket
Phuket – Ranong – Phuket
Phuket – Chumporn – Phuket

→ **Bangkok Airways**

The Bangkok airway has been a familiar domestic airline in Thailand. Most of its income came from the flight fares especially the flight to Koh Samui. It was hard for the competitors to penetrate the Samui market although it has the great demand since, Bangkok airways had its own airport at Samui. Every days, there were almost 15 flight to Koh Samui. In another word, Bangkok airways almost had monopolized the flight to and from Samui. However, there was some Thai Airways flights to Samui, but only a little market shared when compared with those of Bangkok Airways. Although, occupying the high market share, Bangkok airways continued to retain existing by purchasing the new B717, the more high speed jet aircraft, with has the flight time to Samui about 45 minutes, instead of the existing ATR72 that consumed at least 70 minutes, it was 25 minutes, time saving.

Although, challenging by the considerable growth, but the market was quite monopolized by the Bangkok airways. So, we did not focus on the route to Samui.

3.6.2 The Secondary Competitors

Not only the airlines, that are our competitors. The other modes of transportation can be our competitors. Our competitors may switch to and from the among the existing modes of transportation.

The strength of the air transportation is that, they are fast and convenience. On the contrary, their weakness is that it is rather expensive so, the customers are limited for the high incomes group. Furthermore, it is less flexible than car transportation. One can switch to other modes of transportation, if he/she think that it is does not work. On the contrary, there may be the customers from others mode switch to occupy the air transportation mode. It depends on the decision of the customer to select for the

mode of transportation. The criteria are including pricing, flexibility, punctuality, safety and convenience.

Different market segments have the difference criteria to make a decision. The business segment focuses on the schedule while the tour group focuses on the price and services available.

→ **Local Bus**

There was a shuttle bus from Phuket to Krabi the schdule were:

Phuket

→ **Train**

There was no train destination to phuket. To approach phuket, it can reach by bus, private car, airplane or cruise.

→ **Cruise**

It is suitable for the customers that enjoy staying in the ship for a long times. In Thailand, The famous cruise agencies are:

- Andaman Princess
- Star Cruise

→ **Private Car**

This mode is very flexible, since the visitors can stop anywhere else. But, due to its island geographical, sometime the visitors have faced a problem to park a car on land and approach to the island by ship.

3.6.3 Porter Five Force Analysis

➢ **Threat of new entrant:**

Because of the aviation's deregulation policy of the Thai government that attract the more private sectors more in this business. However, Airline business requires for the high investment so, the company who want to expand in this business must have experiences in this field of business. It is very risk for the one who has less experience at all to invest in this business. Moreover, the new one rather has to provide the different route of flight to lessen the level of competitive

In short, we can summarized that the barriers for new entrant are as the following:

- High capital investment
- Industry standards
- Large distribution channel required
- Government regulation

- **Intensity of rivalry between existing competitors**

At present we defined our competitors as Phuket airline, Air Andaman and Bangkok airways. All of the three competitors, they still growth considerably. Especially, Bangkok airways, they expand their business dominantly, they purchased the new B717 one, with the high performance. Moreover, starting from the domestic market, now, they expand their routing to Kamphusa, Lao, Indonesia and Singapore. For the domestic flight, Bangkok airways has provided about 30 flights per day.

The expanding of Bangkok airways indicates that there is a space for us to run into this business. Moreover, for other airlines, like air andaman, founded in 2000 who has nearly same route as ours, they still expand their route as well as increase number of flight. These strongly support that there still considerable of demand for air carriers in the South.

- **Threat of substitute**

Because the air carrier is the basic infrastructure, the travelers who have the more purchasing power prefer to travel by air to save time. However, there still an opportunity that the travelers will switch to use other mode of transportation like bus, car or train if the qualities of services are worse, not safe or quite expensive. On the contrary, there will be some travelers who switch to use the air transport due to the global changing in economics, social or ways of life.

- **Bargaining power of buyer**

The bargaining powers of the buyer are not much, because the fare rates are quite fixed, less different for different airline. Among the airlines, safety, good services, convenience, good schedule and punctuality are the keys for success.

3.7 Marketing Mix

Our airline will be the exciting new addition to the Thai aviation industry. Based in Phuket with routes to the other resort destinations in southern Thailand, This airline will be an important instrument in the ongoing establishment and promotion of Phuket and the southern peninsular as a world class seaside destination. The marketing mix of this airline including:

3.7.1 Product

As national regulation of capacity and of in-flight services has been increasingly relaxed, the airline industry has become progressively more competitive. That competition focuses on the products that different airlines offer to their customers.

Product planing is crucial in two respects. First, it provides the key link in matching potential demand for air services with actual supply of services, which it offers in the market its serves.

Product planning must set out to attract and satisfy potential customer in the different market segments that it has identified. Furthermore, an airline will want to maximize its revenue and profits, not always in the short term but certainly in the long run. In

brief, the ultimate aim of product planning is to attract and hold customers from the market segments that an airline is targeting and to do this profitability.

An airline' s potential customers will be influenced by five key product features in making travel decisions, and more importantly, in choosing between airlines:

The key product features in making travel decision:

- The fare and the fare condition
- The schedule-based features of the services being offered;
- Aspect of comfort;
- The ease and convenience of gaining access to an airline's services and
- The image, which is associated with different airlines or airline products.

An airline must therefore decide how to combine these various product features to meet customer needs in different markets. This is a complex process because customer requirements will vary not only between different market segment on the same route but also between neighboring route and geographical area.

It would seem that the fare level is the most critical product feature for many market segments, especially in many prices sensitive leisure. It may be less important for business markets, which are price inelastic, though even here marked fare differentials between airlines may have and impact. Fares are also the most dynamic product features in that they can be changed almost daily, at least in the deregulation markets.

If market are price inelastic, or where fares of different carriers are very similar, because of either regulation or competitive pressures, then the others product features become relatively more important in determining the market penetration of different airlines.

❑ **Schedule-based product feature**

From a consumer view points, the critical schedule base features in any markets are the number of frequencies operated, their departure and arrival times, the routing taken and in particular whether flights are direct or involve one or more stop en-route. Conversely, aircraft type is not seen as important, though some short-haul route a jet may be preferred to a turbo prop. Different market segments will have differing schedule requirements. Short haul business markets generally requires at least a morning and early evening flight in each direction on weekdays so as to allow business trip to be completed in a days. Weekend flight may be less important for business travelers but crucial for short-stay weekend holiday markets. Frequency requirements will also vary depending on the type of market, the length of haul and the level of competition. For instance, offering a once-daily service when a competitor has 10 flights a day is unlikely to make much impact on the market.

In the early 1980s, Scandinavian airline (SAS) asked its passengers what were the most important factors for them in choosing a flight when making their decisions. More than two thirds of these surveyed said that departure, arrival time were very important. Other factors were relatively unimportant in travelers' choices. Interestingly, only three percent claimed aircraft type as an important factor in their

decisions. It was in response in such surveys that SAS effectively grounded their new Airbus 300 in 1982 and concentrated on using their smaller DC-9s with fewer than half the seats of the airbus. The smaller aircraft enable SAS to offer higher frequencies and to operate direct on thinner route which the Airbus would have been too large. Such a marketing strategy led inevitably very high unit cost. However, when concentrating on schedule-based product features, SAS was able to attract business traffic which was able prepared to pay the higher fares that such a strategy necessitated.

Other surveys all reinforce the importance of schedule-related features. Such features appear to be the core element of the scheduled airline product on short haul route. A 1987 surveys by The International Foundation of Airline Passengers Association of more than 25,000 passengers, shown in figure. Respondents were asked to identify the three most important features when choosing an airline. Punctuality, convenient schedules and frequency stand out as being by far the most frequently mentioned for shorter sectors of less than 2 hours. Schedules-based features are more important than comfort in short and medium haul flight.

Feature	The three feastures identified as most important when choosing an airline	
	(%)	(Rank)
Schedule based features:		
- Punctuality	54	1
- Convenient Schedules	48	2
- Frequency	45	3
- Aircraft Type	9	4
Comfort-Based Features:		
- Seating Comfort	18	1
- Check-in and Boarding	15	2
- In-Flight Services	12	3
- Carry on Bagage Space	12	4
- Reassign Seats	9	5
Other		
- Safety and Security	33	1
- Low Fare	18	2
- Efficient Reservation	12	3

Figure 3-25 Important product features in airline choices: (Survey of 25,000 respondents)

Source: The International Foundation of Airline Passengers Association.

According to this survey, there is no simple worldwide pattern of needs. Passengers' prioritizes differ from one region of residence to another. North American residents attach unusual importance to pricing including low fares and frequent flyer programs, which are of little importance in other regions. For European residents, the overwhelming importance of schedules, frequency and punctuality for short European flights contrast with low interest in seating comfort and in-flight services.

The surveys summarized in figure 3-25 also highlight the important of punctuality. Numerous surveys, especially in the US., have emphasized growing passenger concern with poor on time performance.

The main reason why schedule-based feature together with the fare are generally the most important product component is that they can be seen quantified objectively. They are explicit and precise: one can compare one schedule departure time with another, or the total journey time of a direct as oppose as one stop service. By comparison, assessment of comfort, convenience or image based product features, such as the quality of airline in-flight service or product features will vary for each trip and between different customers on the same trip. They cannot easily be quantified or compared between different airline.

❑ **Comfort-based product features**

The schedule related features of an air service appear to be more important in most market than comfort based features, but they can not be adjusted rapidly. In many cases they can not be changed at all, either because an airline already has a network and schedules which meets market needs or because of external constraints such as the bilateral air service agreements or and absence of available runway slot. Yet, as markets become more competitive, the need for product innovation has intensified. Since, schedule, in most cases, can be changed only in the medium term, if at all, airline product development has often concentrated on improving comfort based features, which can be changed more readily and quickly. Three aspects of airline product are important in determining passenger's perception of comfort.

The first in the interior layout and configuration of the aircraft, which affects the width and the pitch of each seat and thereby determines the space available for each passenger. Space seem to be the key comfort variable. There is a tradeoff between the seating density and the unit cost in that the more seats that can be put into the aircraft the lower are the operating cost per seats.

The second important area where decisions have to be made is that of in flight service and catering standards. This covers the nature and quality of food and beverage are provided, the number of cabin staff, the available of magazine and newspapers, in flight film entertainment. A great deal of effort goes into planing airline meals and meeting target catering standards. However, catering standard together with the

quality and attentiveness of the cabin staff may create a certain image for a particular airline, which may be important in marketing terms.

Lastly, the services offered to passengers on the ground are a key component of the product. An airline has to consider whether to provide its own check in and handling staff or to use another airline or handling agent. It must decide what is an acceptable average waiting time for check in for its passengers, since this well determine how many check in desk needs for each flight. More deck cost more money. The ground environment and quality of services provided can have an important influence on a passenger's perception. Furthermore, the airline must specify differing comfort-based product features for different market segments they are trying to attract.

Because, they can be more easily changed and more readily advertised, comfort-based product features are continuously being monitored revised. There is a constant requirement to respond to respond to product change introduced by the competitors and an even greater need for an airline to be the first to introduce innovative changes. As the national regulations have been relaxed, allowing airlines greater product innovation, one has seen rapid product development.

❑ **Airline Image**

The final groups of product features are those associated with the image that an airline wishes to create both among its own customers and among the public at large. This is done in a variety of ways: through the nature of its advertising and promotion, through the airline logo, its color schemes, and the design of the aircraft interior, sales office and through the quality of service provides by its staff in the air and on the ground.

A key element in image building is to ensure that what is promised before the flight actually materializes and meet passenger expectation when the flight take place. This is why marketing and product planning must be embarrassing, covering what is produced as well as how it is sold.

As market have become more competitive, a number of airlines have introduced the concept of "branding" to try to differentiate their product from others airline's products selling at the same fares.

As national regulations on fares and capacity decrease further, then branding will increasingly become an important competitive tool affecting an airline's market image.

To differentiate our airline to the competitors, the strategies including:

- ♦ Product differentiation
- ♦ Innovation

Our key product features are:

- **Safe and on time operations** are our main objectives. We guarantee the flight safety with the reliability of our aircraft and the air traffic control service, which we have provided for all over 50 years.

- **Good service,** ground crew will ensure fast and efficient service to our passengers at various airports. For in flight service, our people work as a team to deliver our passengers safe, on time and comfortable air transportation.

- **Route of flight,** at first, will connect Phuket to the other adjacent provices like Krabi, Surat, Ranong, Trang and Hat Yai. In the near future, will extend to the neighbors countries like Indonesia, Singapore and Burma. The route analysis will be in the next section.

- **Schedule** will initially operate a shuttle service to cover the major provinces in southern Thailand to provide immediate and convenient connections with Phuket International Airport. We also provide the charter flights for tour operators organizing various tour groups including golftour, scuba diving etc Remark, the analysis will be in the next section.

- **Image,** we have the image of safety under the name AEROTHAI who is only one to provide air traffic control service in Thailand.

3.7.2 Price

In Thailand, the pricing for the services in airline industry have depended on the government. For the domestic market, it has been fixed by the Department of Aviation (DOA). And for the international markets have been fixed by the International Air Transportation Authority (IATA), under the of the international governments

Pricing in airline industry, it is necessary to analyze both of the operation cost and the restriction from the government. The fare has to be decrease in order to increase the company's income that leading to the earlier break-even point or at least approaching the operation cost. The main objective of the restriction on the air fare is to maintain operation standard of airline without the price competition. SO, price is no longer to be our competitive tool.

3.7.3 Place

It is necessary to emphasize marketing collaboration with travel agent, tour operators, and airlines in form of joint marketing.

Marketing efforts will be concentrated through the following channels:

- ❑ Leading tour operators from overseas offering Thailand as a major destination will also be contracted by the company to offer their services together with local tour companies representing overseas organizations in Thailand and those acting as inbound handlers.

- ❑ Interline relationship will be established to facilitate convenient booking and connections for passengers.

- Cruise operators who arrange one way cruise between Phuket and other resort destinations.
- Charter flights for tour operators organizing various tour groups including golf-tour, scuba diving etc.

We will distribute our product through the market through the sale people, direct sale, on line e-commerce.

Our distribution channel are including:

Direct sale

The company will have its own marketing offices base in both Bangkok International and at Phuket international airport. Here, individual customer can self purchase the tickets at those offices. Our sales people will there to gives the more information about the flights.

Agency

The company will sale our tickets through the tour agencies. This way we have to sale the tickets to the agency at the whole sales price. However, this way we can sale the product in a large batch size.

Codesharing

The company plan to contact with the interline. For example, the foreign tourists from Korea who prefer to arrival at Phuket, but there are no Korean's flight that directly to Phuket. Now, under the codesharing of our airline, they can only contact the office of Korean airline as one stop service, then They can catch the flight to Phuket by our airline, disregard the bureaucracy system at the Bangkok international airport.

The company, will also coordinate with the Thai airways, as a sub- contractor. In case the TG flight is full or others reasons.

Coordinate with Tour Operators

The company will contact with the tour operates for the tour package. The customers will save cost and convenient, since they can have a trip at a one stop service with a little budget.

Coordinate with general organizations

The company will contact with the hospital incase to evacuate the patient s from Phuket to Bangkok as a charter flight. Moreover, we will contact with the privates organization to use our air carrier foe specific purposes such as mapping, surveying, etc.

Internet

Internet is the basic knowledge and essential infrastructure of electronic commerce. The E-commerce will be the most convenient and effective way to do business in next decade. It can bring the largest number of sales transaction and it can provide 24 hour service for any customers from anyplace of the world.

As same as other businesses, Internet is one of the critical success factors of airline industry. It is the great opportunity of AEROTHAI to use the Internet as the effective sale transaction with consumers all over the world. At this time, Thai airway, air Andaman, Bangkok airways all have their e-commerce transaction. AEROTHAI also have the e-business through our own web site. The customer, can visit our product and services through the web site and self-reserve the flight on line.

Additionally, not only does the Internet support on-line shopping or e-commerce, but the Internet can also provide the information about the flight features, company and others. In conclusion, the Internet will be the critical success factor to assist and support the growth of our new airline.

3.7.4 Promotion

Because our target customers are the foreigners to Phuket which are the individual or tour group. The promotion will concentrate on the :

Campaign

For the individual :

- **The Tour Package :**

  Special offer program will be established as the tour package or one stop services like, buy tickets free rooms or free local tour. This is necessary to emphasize marketing collaboration in the form of joint marketing with the other air carriers such as Thai airway, and also with the hotel, the resort and local tour operators.

- **Mileage Plus:**

  Collaboration with the visa card to support the marketing objective by offering the mileage plus. This also support the e-commerce

  For the tour group:

- Buy the tour agencies the tickets at the wholesale price. Give the more percent to the tour agent than those of paid by the competitors.

Advertising

- To create a system to link together the main web site of TAT in variable language like German or Italian.

- To co-ordinate with the Immigration office, Airport Authority of Thailand, and concerned government sector to promote tourism among transit passengers.
- To bring in tour companies a mass media, and television filming crews to visit Phuket
- To participate the travel fair in Thailand

3.8 Forecasting Demand

3.8.1 The need for forecasts

Forecasting is the most critical area of airline management. An airline forecasts demand in order to plan the supply of services required to meet that demand. Especially for the new entrance of airline industry, forecasting demand is very important since it is critical for making decision on aircraft procurement, the opening up of the route and markets, the training of new flight crew, investment in maintenance facilities, aircraft scheduling decisions, advertising as well as sales campaign.

Almost every tactical or strategic decision taken within an airline stems ultimately from a forecast. At the same time, forecasting is the area in which mistakes are most frequently made and the one about which there is least certainly. There is no absolute truth in the forecasting, no optimum method that can guarantee accuracy. Instead, airline forecasters use any one of a range of forecasting techniques, of varying mathematical complexity, each of which has advantage and disadvantages, none of which can ensure consistent accuracy. Yet forecasts have to be made since so many decision flow from them. The budgets for established an airline could be calculated, after the demand prediction.

3.8.2 Linear Forecast

Simple Trend

The straight line represents the trend of the traffic overtime and that traffic increases by a constant amount with each unit of time. The technique involves drawing a straight line through the time series so as to produce best fit. This is normally done by the least square method, through other mathematical techniques are also available. The least square criterion requires that the line fitted to the data should be the one which minimize the sum of the squares of the vertical deviations of the data points from the line. Some of the points are likely to be above the line, and therefore positive, and some below the line, and so negative. These would cancel each other out if one were merely to minimize the sum of the sum of the deviations. By using the square of the deviations this problem is avoided.

In fitting a line of the form $Y = a + b$ to the time series data so as to justify the least square criterion, there remains the problem of how closely the straight line corresponds to those data. The goodness of fit is measured by the index known as the

coefficient of correlation (R) or the square of this quantity (R^2), which is strictly speaking the coefficient of determination. In practice, the R^2 coefficient is used most frequently. If the fit of the straight line correspond to those data is very poor, the value of R^2 approaches zero. If the fit is very good, the value will be closed to 1.

Within the airline industry (Rigas Dogainis,1991), suggests that accurate predictions using linear trend lines requires very high coefficient determination. They should be above 0.90 and preferably higher.

Fitting the trend line to the Bangkok- Chiang Mai (Thai Airway) data produce the following result:

$$Y = 39{,}246\ X + 1{,}322{,}011$$

This indicates that a trend line starting at 1,322,011 passengers and growing by 39,246 passengers per year (X) produce a quite good fit with the actual traffic in each year since the coefficient of determination at 0.87 is high. To forecast traffic in 2005 one needs to add the passengers for each year of the 5 year form 2001-2005 to the starting figure of 1,322,011 :

$$2005 \text{ traffic} = 1{,}322{,}011+(39{,}246*5)$$

$$= 1{,}518{,}241 \text{ persons}$$

Trend projections are simple and easy to use. But they can be used only if the data exhibit some regularity without wide fluctuations. Many air routes, however, do exhibit very pronounced traffic variations, with large jump in traffic followed inexplicably by sudden slumps. In such conditions, fitting trend lines with an adequately high coefficient of determination many prove difficult. One possible solution is to use moving average.

Throughout the world the majority of airlines use time series projections as the starting point for their forecasting exercises. There are simple to use provided that adequate statistical. Time-series projection allows airlines to make individual forecasts for each route.

Although they are widely used, time series forecasting method do have a fundamental underlying weakness. They are based on the assumption that traffic growth and development are merely functions of time. As time changes, so does demand. Instead, there are so many other factors that effect the demand such as the change in income, taste, technologies, tariff and so on.

There are two ways in which airline forecasts can try to overcome this underlying weakness. Most airlines start by making time-series projections. They then modify these projections on the basis of market research finding and executive judgement and turn them into forecasts. In this way they can allows for the impact of the expected changes in demand factors and of plan changes with they themselves control. As an alternative few airlines, usually may try to use casual forecasting techniques, which relate traffic growth not to time but to series of assumed causal factors.

3.8.3 The Forecasting Demand in Each Route of Flight

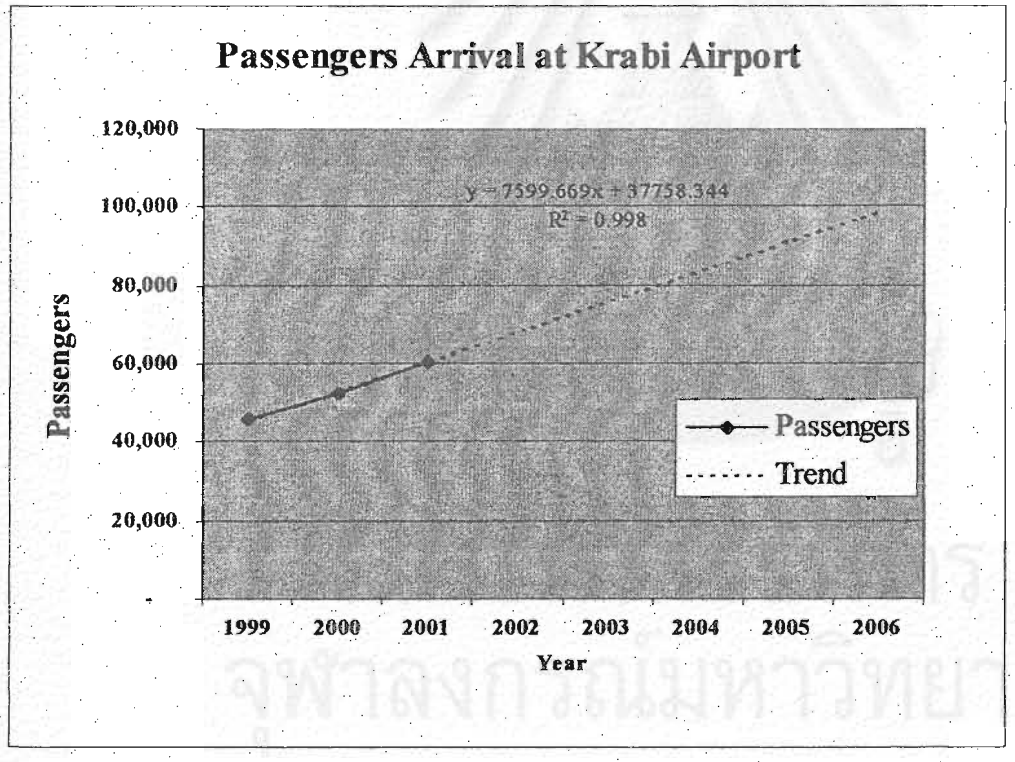
Phuket-Krabi

Route of flight : Phuket – Krabi –Phuket
Type of aircraft : Jet Stream 31 (Leasing)
Distance : 40 nautical miles
Flight / Day : 12
Fare : 1,000 Bhts / Flight

Forecasting Demand

Year	1999	2000	2001	2002	2003	2004	2005	2006
Passenger Arrival	45,540	52,594	60,739	70,147	84,924	91,392	98,280	133,952
Est. Passengers				35,074	42,462	45,696	49,140	66,976

Figure 3-26 Passenger arrival at Krabi Airport and the trend
Source: Department of Aviation Thailand



Firstly, we use the linear regression to estimate the passenger's arrival to Phuket in the year 2002-2006 by using the statistic data in the year 1999-2001. Secondly, we predict the demand by assume that at least 50% of the passenger arrival to Krabi Airport are our customers. The demand forecasting for Phuket-Krabi flight illustrated in figure below.

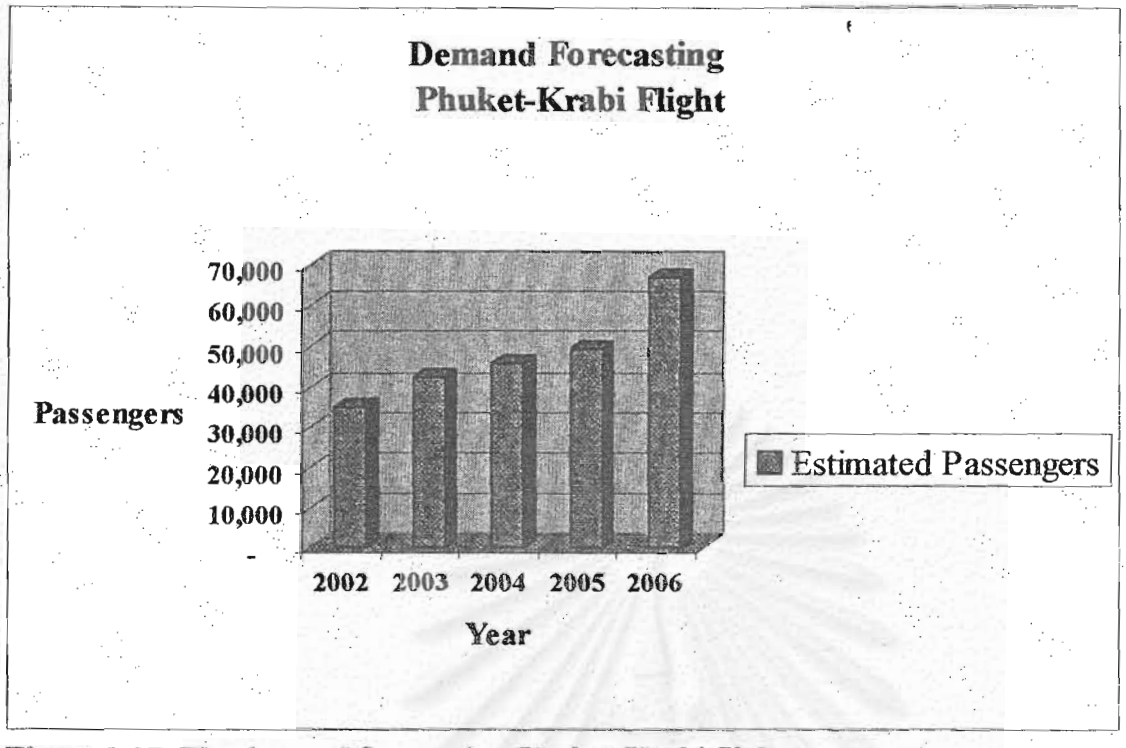


Figure 3-27. The demand forecasting Phuket-Krabi flight

Demand forecasting will be useful for the fleet planing. Type of aircraft, capacity and frequencies of flights can not be estimated without the demand prediction. Moreover, it also useful for the budgeting. In the financial feasibility study, we also use these data for calculation the profit-loss and the break even point of the project.

Phuket-Nakorn Sri

Route of flight : Phuket – Nakorn Sri –Phuket
Type of aircraft : Jet Stream 31 (Leasing)
Distance : 100 nautical miles
Flight / Day : 4
Fare : 1,200 Bhts / Flight

Forecasting Demand

Year	1999	2000	2001	2002	2003	2004	2005	2006
Passenger Arrival	17,617	20,265	23,310	26,813	32,032	35,000	37,408	49,952
Est. Passengers				13,407	16,016	17,500	18,704	24,976

Figure 3-28 Passenger arrival at Nakorn-Sri Airport and the trend
Source: Department of aviation Thailand

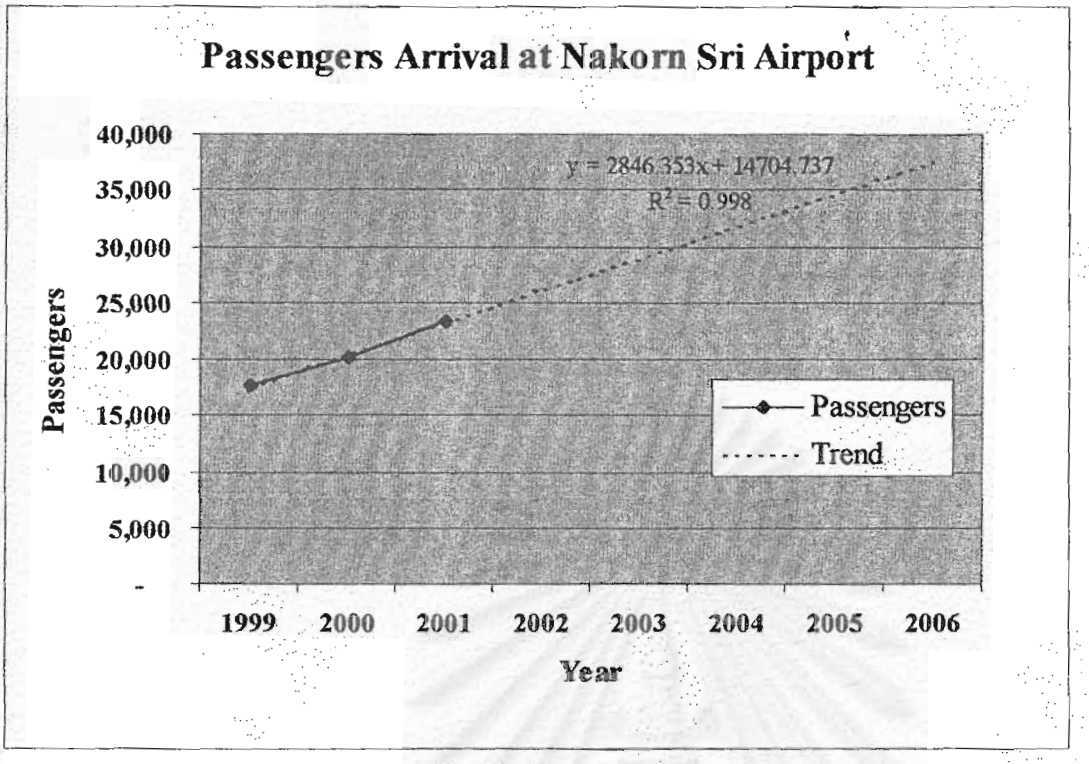
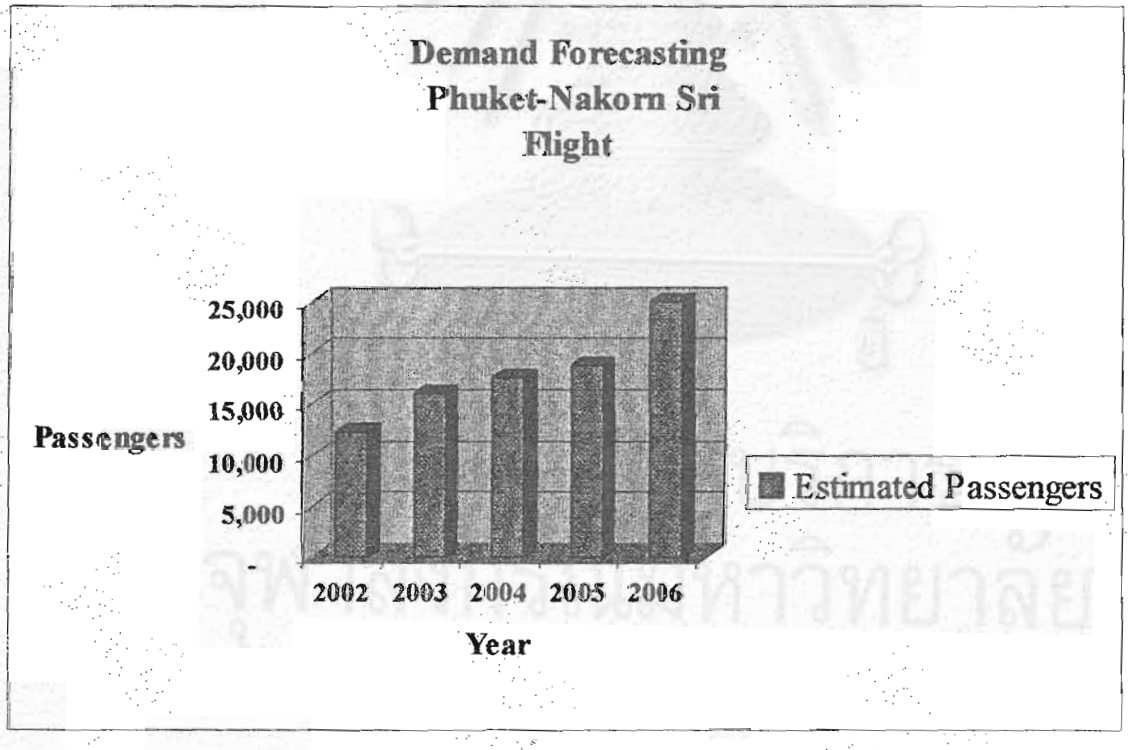


Figure 3-29 Demand forecasting Phuket-Nakorn Sri Flight



Phuket-Ranong

Route of flight : Phuket – Ranong –Phuket
Type of aircraft : Jet Stream 31 (Leasing)
Distance : 101 nautical miles

Flight / Day : 4
Fare : 1,200 Bhts / Flight

Year	1999	2000	2001	2002	2003	2004	2005	2006
Passenger Arrival	5,350	6,802	8,647	26,813	32,032	35,000	37,408	49,952
Est. Passengers				12,278	16,016	17,500	18,704	24,976

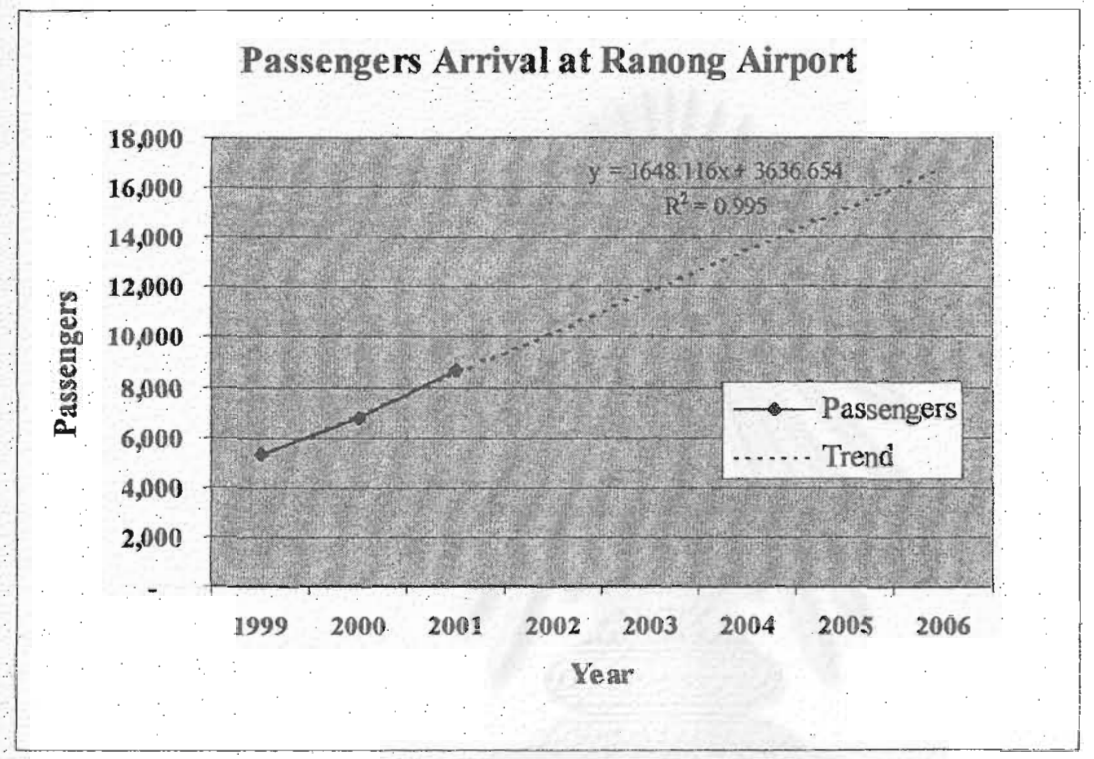


Figure 3-30 Passengers arrival at Ranong airport

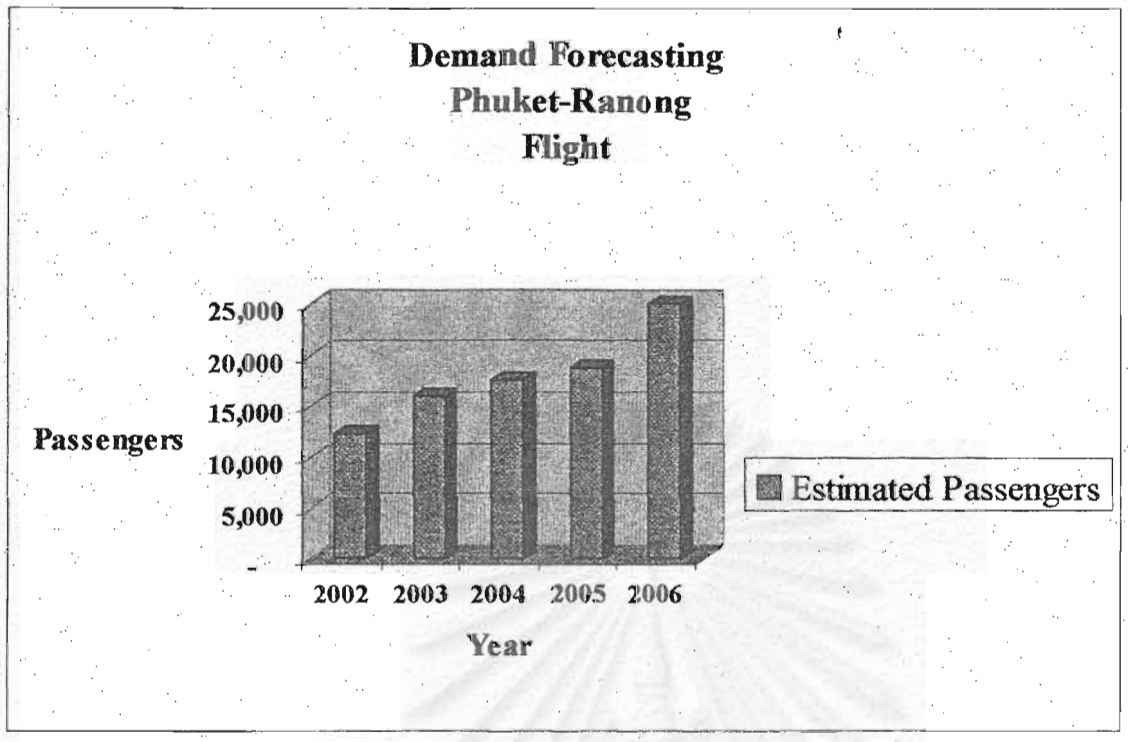


Figure 3-31 Demand forecasting Phuket – Ranong Flight

Phuket-Chumporn

Route of flight	:	Phuket – Chumporn –Phuket
Type of aircraft	:	Jet Stream 31 (Leasing)
Distance	:	174 nautical miles
Flight / Day	:	2
Fare	:	2,500 Bhts / Flight

Year	1999	2000	2001	2002	2003	2004	2005	2006
Passenger Arrival	6,721	8,128	9,828	11,885	15,512	16,996	17,752	28,952
Est. Passengers				5,943	7,756	8,498	8,876	14,476

Figure 3-32 Passengers arrival at Chumporn airport
Source :Department Of Aviation Thailand

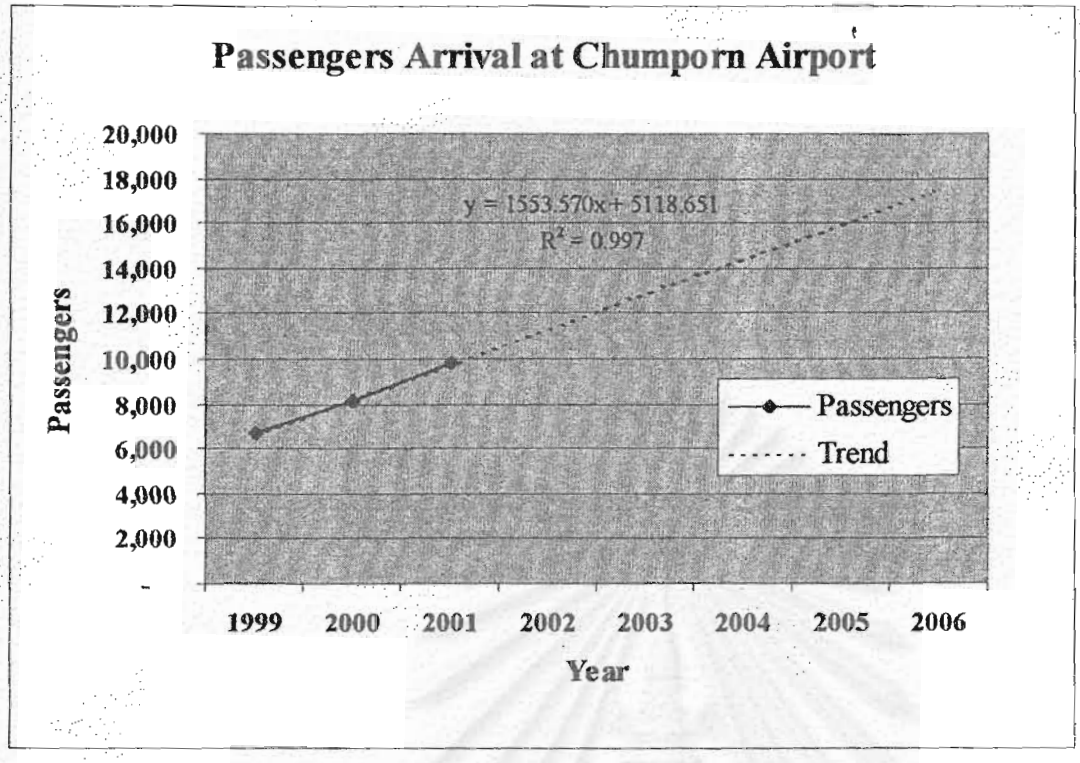


Figure 3-33 : Demand forecasting Phuket - Chumporn Flight

CHAPTER 4

ENGINEERING FEASIBILITY STUDY

4.1 Introduction

The engineering feasibility study started with fleet planning. The estimated demands for each route each year were used for the fleet planning. The fleet planning was the routing, scheduling and aircraft specification.

Because, the demands for travelling by air in the south has fluctuated so much in the year. It was necessary to plan the fleet for each month. From the statistics, the demands were peak in November, December, January and February of the year.

Using the forecasting demand, starting the fleet planing, then specifying the type of aircraft. After the aircraft selection, then, it has to be specific that the aircraft should be brought or leased. Then, calculated the load factor by comparing the expected passengers with the aircraft capacity. Finally, using the data from the fleet planning can do the cost calculation.

4.2 The Airline Concept

Our airline product concept should be :

- Safe
- Fast
- High frequencies schedule flight
- Convenience

4.3 Fleet Planning

Fleet planning used the data from the demand forecasting to select the type of aircraft route of flight and flight's schedule.

In the study, we found that, the demands for the flight in the south are seasoning. As a resulted the fleet planning has to be planed monthly or at least quarry. The high season has started in October and finished in March, the other months of the year, the tourists are quite low.

In the beginning of this section, we had already forecasting the demand for each route of flight. Then the aircraft selection was established. The Jet Stream 31 was the most appropriated one. The project has the life about 5 years. The project will be started in the year 2001 and will be ended in the year 2006.

The flights will be started in November 2002. As a pilot, there will be first, started with 4 routes including, Phuket-Krabi-Phuket, Phuket-Nakorn Sri-Phuket, Phuket-

Ranong-Phuket, Phuket-Chumporn-Phuket and Charter flight. The fleets planning are illustrated in figure 3-9

Year 2002

Fleet Planning
Phuket-Krabi

Phuket-Krabi	Share (%)	NOV (%)	NOV Est. Pas.	DEC (%)	DEC Est. Pas.	TOTAL
Oversea/TO.	35%	**35%**	5	**29%**	5	**10**
Local/TO.	20%	**20%**	3	**24%**	4	**7**
Individual	20%	**20%**	3	**20%**	3	**6**
Trv.agent	5%	**5%**	1	**7%**	1	**2**
Interlines	10%	**10%**	1	**10%**	2	**3**
Hotel	5%	**5%**	1	**5%**	1	**2**
Others	5%	**5%**	1	**5%**	1	**2**
Est.Pas./Flt	***100%***		***14***		***16***	***30***
Seat offer/Flt.			19		19	**38**
Flight/Day			12		12	**12**
Seat offer/Month			**7,980**		**6,384**	**14,364**
Est. Seat/Month			**5,880**		**5,376**	**11,256**
Load Factors			**74%**		**84%**	**78%**

Phuket-Nakorn sri

Phuket-Nakorn Sri	Share (%)	NOV (%)	NOV Est. Pas.	DEC (%)	DEC Est. Pas.	TOTAL
Oversea/TO.	35%	**35%**	5	**32%**	4	**9**
Local/TO.	20%	**20%**	3	**23%**	3	**6**
Individual	20%	**20%**	3	**20%**	3	**6**
Trv.agent	5%	**5%**	1	**5%**	1	**1**
Interlines	10%	**10%**	1	**10%**	1	**3**
Hotel	5%	**5%**	1	**5%**	1	**1**
Others	5%	**5%**	1	**5%**	1	**1**

Est.Pas./Flt	***100%***		***14***		***14***	**28**
Seat offer/Flt.			19		19	**38**
Flight/Day			4		4	**8**
Seat offer/Month			**2,660**		**2,128**	**4,788**
Est. Seat/Month			**1,960**		**1,568**	**3,528**
Load Factors			**74%**		**74%**	**74%**

Phuket-Ranong

Phuket-Ranong	**Share (%)**	**NOV**		**DEC**		**TOTAL**
		(%)	**Est. Pas.**	**(%)**	**Est. Pas.**	
Oversea/TO.	35%	**35%**	4	**32%**	4	**38**
Local/TO.	20%	**20%**	2	**23%**	3	**29**
Individual	20%	**20%**	2	**20%**	3	**25**
Trv.agent	5%	**5%**	1	**5%**	1	**6**
Interlines	10%	**10%**	1	**10%**	1	**13**
Hotel	5%	**5%**	1	**5%**	1	**6**
Others	5%	**5%**	1	**5%**	1	**7**
Est.Pas./Flt	***100%***		***12***		***14***	***26***
Seat offer/Flt.			19		19	**38**
Flight/Day			2		2	**4**
Seat offer/Month			**1,330**		**1,064**	**2,394**
Est. Seat/Month			**840**		**784**	**1,624**
Load Factors			**63%**		**74%**	**68%**

Phuket-Chumporn

Phuket-Chumporn	**Share (%)**	**NOV**		**DEC**		**TOTAL**
		(%)	**Est. Pas.**	**(%)**	**Est. Pas.**	
Oversea/TO.	35%	**35%**	4	**32%**	4	**9**
Local/TO.	20%	**20%**	2	**23%**	3	**6**
Individual	20%	**20%**	2	**20%**	3	**5**
Trv.agent	5%	**5%**	1	**5%**	1	**1**
Interlines	10%	**10%**	1	**10%**	1	**3**

Hotel	5%	**5%**	1	**5%**	1	**1**
Others	5%	**5%**	1	**5%**	1	**1**
Est.Pas./Flt	***100%***		***12***		***14***	**26**
Seat offer/Flt.			19		19	**38**
Flight/Day			2		2	**4**
Seat offer/Month			**1,330**		**1,064**	**2,394**
Est. Seat/Month			**840**		**784**	**1,624**
Load Factors			**63%**		**74%**	**68%**

Charter

Charter	**Share**		**NOV**		**DEC**	**TOTAL**
	(%)	**(%)**	**Est. Pas.**	**(%)**	**Est. Pas.**	
Oversea/TO.	33%	**25%**	5	**29%**	6	**10**
Local/TO.	33%	**25%**	5	**29%**	6	**10**
Individual	0%	**25%**	5	**13%**	2	**7**
Trv.agent	0%	**0%**	0	**0%**	-	**-**
Interlines	34%	**25%**	5	**30%**	6	**10**
Hotel	0%	**0%**	0	**0%**	-	**-**
Others	0%	**0%**	0	**0%**	-	**-**
Est.Pas./Flt	***100%***		***19***		***19***	***38***
Seat offer/Flt.			19		19	**38**
Flight/Day			0.0860		0.1430	**0.23**
Seat offer/Month			**57.19**		**76.08**	**133.27**
Est. Seat/Month			**57.19**		**76.08**	**133.27**
Load Factors			**100%**		**100%**	**100%**

Table 4-1 Fleet planing in the year 2002

Year 2003

In the year 2003, Route of flights will be:

- **Phuket-Krabi-Phuket**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	6,916	6,916	6,916	6,916
Passengers	4,816	3,136	3,192	4,872
Load Factor	70%	45%	46%	70%

Table 4-2 Fleet Planning for Phuket-Krabi-Phuket flight in year 2003

For the Krabi flight, we have expected to have 4,816 passengers in Quater1, 3,136 passengers in Quarter2, 3,192 passengers in Quarter3 and 4,872 passengers in Quater4. It can be seen that in Q1 and that Q4 was the high season, the load factors were quite rather high that mean there will be more passenger to take the flight during those periods.

- **Phuket-Nakorn Sri-Phuket**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	3,458	3,458	3,458	3,458
Passengers	2,044	1,568	1,526	2,240
Load Factor	59%	45%	44%	65%

Table 4-3 Fleet Planning for Phuket-Krabi-Phuket flight in year 2003

For the Nakorn Sri flight, the estimated the passengers are illustrated in table 4-3. The load factors for this route are rather low when compared with those of the Krabi flights since Krabi province has the more attractive place to visit rather than Nakorn Sri has.

- **Phuket-Chumporn-Phuket**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	3,458	3,458	3,458	3,458
Passengers	2,408	1,456	1,596	2,296
Load Factor	70%	42%	46%	66%

Table 4-4 Fleet Planning for Phuket-Chumporn-Phuket flight in year 2003

For the Chumporn flight, the estimated passengers are forecasted as illustrated in table 4-4.

- **Charter Flight**

Period	Q_1 (Jan-Mar)	Q_2 (Apr-Jun)	Q_3 (Jul-Sep)	Q_4 (Oct-Dec)
Capacity	171	134	134	172
Passengers	171	134	134	172
Load Factor	100%	100%	100%	100%

Table 4-5 Fleet Planning for Phuket-Chumporn-Phuket flight in year 2003

For the charter flight, we estimated to have at least 172 passengers in Q_1 and Q_4. In the low season of Q2-Q3, there will be at least 172 passengers for the charter flight.

Year 2004

In the year 2004, Route of flights will be:

- Phuket-Krabi-Phuket
- Phuket-Nakorn Sri-Phuket
- Phuket-Ranong-Phuket
- Phuket-Chumporn-Phuket
- Phuket-Surat-Phuket*
- Charter flight

- **Phuket-Krabi-Phuket**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	20,748	11,438	10,374	20,748
Passengers	16,632	6,804	6,972	15,288
Load Factors	80%	59%	67%	74%

Table 4-6 Fleet Planning for Phuket-Krabi-Phuket flight in year 2004

In year 2004, we will increase our flights to be12 flights in the peak season and 6-8 flight in the medium and low season respectively. We expected that, there would be more passengers to utilize our services. This case, we expect the customers to be at least 80% of the total capacity.

- **Phuket-Nakorn Sri-Phuket**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	6,916	6,916	6,916	6,916
Passengers	5,096	3,388	3,416	5,600
Load Factors	74%	49%	49%	81%

Table 4-7 Fleet Planning for Phuket-Nakorn Sri-Phuket flight in year 2004

Like the Krabi flight, we plan to increase the number of flights to be 4 flights daily

Phuket-Ranong-Phuket

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	3,458	3,458	3,458	3,458
Passengers	2,184	1,568	1,596	2,436
Load Factors	63%	45%	46%	70%

Table 4-8 Fleet Planning for Phuket-Ranong-Phuket flight in year 2004

The company plan to still 2 flights per for the route Phuket-Ranong-Phuket flight.

- **Phuket-Chumoporn-Phuket**

Period	Q_1 (Jan-Mar)	Q_2 (Apr-Jun)	Q_3 (Jul-Sep)	Q_4 (Oct-Dec)
Capacity	3,458	3,458	3,458	3,458
Passengers	2,772	1,638	1,764	2,324
Load Factors	80%	47%	51%	67%

Table 4-9 Fleet Planning for Phuket-Chumporn-Phuket flight in year 2004

- **Phuket-Surat-Phuket**

This year, we will increase our capacity by setting up a new route of flight from Phuket to Surat, which is one of the most attractive places in the south peninsular of Thailand.

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	3,458	3,458	3,458	3,458
Passengers	2,268	1,456	1,596	2,296
Load Factors	66%	42%	46%	66%

Table 4-10 Fleet Planning for Phuket-Surat-Phuket flight in year 2004

As a pilot, we will start with 2 flights in the both the high season and low season. We expect to have 2,268 passengers with the capacity of 3,458 in Q1. That means at least 66% of the total capacity that are the expected passengers.

- **Charter flight**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	322	250	271	336
Passengers	322	250	271	336
Load Factors	100%	100%	100%	100%

Table 4-11 Fleet Planning for the Charter flight in year 2004

For the charter flight, we expect to have 322 passengers in Q1, 250 passengers in Q2, 271 passengers in Q3 and 336 passengers in Q4 respectively.

Year 2005

In the year 2005, Route of flights will be:

- Phuket-Krabi-Phuket
- Phuket-Nakorn Sri-Phuket
- Phuket-Ranong-Phuket
- Phuket-Chumporn-Phuket
- Phuket-Surat-Phuket
- Phuket-Trang-Phuket
- Charter flight

We will increase our capacity by open up the new route from Phuket to Trang which is one of the most fascinating place in the South. Moreover, we will continue to expand our capacity by leasing more aircraft to increase the schedule flights as well as the charter flight.

- **Phuket-Krabi-Phuket**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	20,748	11,438	10,374	20,748
Passengers	17,472	7,224	6,972	17,472
Load factor	84%	63%	67%	84%

In the year 2005, we will lease more aircraft to increase more schedule flight. The expected passengers would be 17,474 whereas our maximum capacity increased to be 20,748 in Quarter 1 of the year 2005. We plan to increase the flight to 16 flight in the high season.

Table 4-12 Fleet Planning for the Phuket-Krabi-Phuket flight in year 2005

- **Phuket-Nakorn Sri-Phuket**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	6,916	6,916	6,916	6,916
Passengers	5,824	3,640	3,640	5,600
Load factor	84%	53%	53%	81%

This year, we expect to have more passengers than it was in the previous year since our strong promotion will make the airline become familiar among the tourists. In the peak period, the load factor will be reach 84% and 53% in the low season.

Table 4-13 Fleet Planning for the Phuket-Nakorn Sri-Phuket flight in year 2005

- **Phuket-Ranong-Phuket**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	6,916	3,458	3,458	6,916
Passengers	4,816	1,568	1,596	4,872
Load factor	70%	45%	46%	70%

Table 4-14 Fleet Planning for the Phuket-Ranong-Phuket flight in year 2005

For the Ranong flight, the flights will be increased to be 14 flights daily in Q1 and Q4. The load factors still less as in the previous year.

- **Phuket-Chumporn-Phuket**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	3,458	3,458	3,458	3,458
Passengers	2,772	1,820	1,960	2,324
Load factor	80%	53%	57%	67%

Table 4-15 Fleet Planning for the Phuket-Chumporn-Phuket flight in year 2005

- **Phuket-Surat-Phuket**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	6,916	3,458	3,458	6,916
Passengers	4,760	1,456	1,736	5,376
Load factor	69%	42%	50%	78%

Table 4-16 Fleet Planning for the Phuket-Surat-Phuket flight in year 2005

- **Phuket-Trang-Phuket**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	3,458	3,458	3,458	3,458
Passengers	2,044	1,456	1,736	2,184
Load factor	59%	42%	50%	63%

Table 4-17 Fleet Planning for the Phuket-Trang-Phuket flight in year 2005

Phuket-Trang-Phuket will be our new route of flight. We open this flight for the reason that, at Trang, there are some interesting places that attracted many of tourist.

- **Charter flight**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	442	356	383	527
Passengers	442	356	383	527
Load factor	100%	100%	100%	100%

Table 4-18 Fleet Planning for the charter flight in year 2005

Year 2006

In the year 2006, the route of flights will be:

- Phuket-Krabi-Phuket
- Phuket-Nakorn Sri-Phuket
- Phuket-Ranong-Phuket
- Phuket-Chumporn-Phuket
- Phuket-Surat-Phuket
- Phuket-Trang-Phuket
- Phuket-Hua Hin-Phuket
- Charter flight

In year 2006, we will increase our capacity by leasing the more two aircraft and open the new route from Phuket to Hua-Hin since this point has a great amount of international tourists who are our target market.

- **Phuket-Krabi-Phuket**

Period	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sep)	Q4 (Oct-Dec)
Capacity	27,664	13,832	13,832	27,664

Passengers	24,192	8,736	9,296	24,752
Load Factor	87%	63%	67%	89%

Table 4-19 Fleet Planning for the Phuket-Krabi-Phuket flight in year 2006

In year 2006, for Krabi flight, we will increase our flights to be 16 flight in the high season and 8 flights in the low season.

- **Phuket-Nakorn Sri-Phuket**

Period	**Q1** (Jan-Mar)	**Q2** (Apr-Jun)	**Q3** (Jul-Sep)	**Q4** (Oct-Dec)
Capacity	10,374	6,916	6,916	10,374
Passengers	8,736	3,640	4,200	8,400
Load Factor	84%	53%	61%	81%

Figure 4-20 Fleet Planning for the Phuket-Nakorn Sri-Phuket flight in year 2006

For the Phuket-Nakorn Sri-Phuket flight, the company plan to increase the flight to be 6 flights per day in the high season and 4 flights in the low season.

- **Phuket-Ranong-Phuket**

Period	**Q1** (Jan-Mar)	**Q2** (Apr-Jun)	**Q3** (Jul-Sep)	**Q4** (Oct-Dec)
Capacity	6,916	3,458	3,458	6,916
Passengers	5,264	1,568	1,596	5,600
Load Factor	76%	45%	46%	81%

Figure 4-21 Fleet Planning for the Phuket-Ranong-Phuket flight in year 2006

For the Ranong flight, we will increase the flight to be 4 flight in the peak period and 2 flight in the low season.

- **Phuket-Chumporn-Phuket**

Period	**Q1** (Jan-Mar)	**Q2** (Apr-Jun)	**Q3** (Jul-Sep)	**Q4** (Oct-Dec)
Capacity	6,916	3,458	3,458	6,916
Passengers	5,544	1,820	1,960	5,152
Load Factor	80%	53%	57%	74%

Figure 4-22 Fleet Planning for the Phuket-Chumporn-Phuket flight in year 2006

Like Ranong flight, the company plan to increase the Chumporn flight to be 4 flight in the high season and 2 flight in the low season.

- **Phuket-Surat-Phuket**

Period	**Q1** (Jan-Mar)	**Q2** (Apr-Jun)	**Q3** (Jul-Sep)	**Q4** (Oct-Dec)
Capacity	10,374	3,458	3,458	10,374
Passengers	8,316	1,820	1,960	7,308
Load Factor	80%	53%	57%	70%

Table 4-23 Fleet Planning for the Phuket-Surat-Phuket flight in year 2006

We plan to increase the Surat flight to be 6 flights in the high season and still 2 flight in the low season.

Phuket-Trang-Phuket

Period	**Q1** (Jan-Mar)	**Q2** (Apr-Jun)	**Q3** (Jul-Sep)	**Q4** (Oct-Dec)
Capacity	6,916	6,916	6,916	6,916
Passengers	4,536	3,640	3,920	4,872
Load Factor	66%	53%	57%	70%

Table 4-24 Fleet Planning for the Phuket-Trang-Phuket flight in year 2006

For the Trang flight, we plan to increase the flight to be 4 flight per day. We expect more passengers in this year, about 70% of the total capacity will be our passengers.

- **Phuket-Hua Hin-Phuket**

Period	**Q1** (Jan-Mar)	**Q2** (Apr-Jun)	**Q3** (Jul-Sep)	**Q4** (Oct-Dec)
Capacity	6,916	3,458	3,458	6,916
Passengers	5,824	1,820	2,100	4,872
Load Factor	84%	53%	61%	70%

Table 4-25 Fleet Planning for the Phuket-Hua Hin-Phuket flight in year 2006

Hua Hin is place where the foreign tourists prefer to visit because it is very near to Bankok. We will use Hua-Hin as the door to our south peninsular base. The tourist will enjoy the seaside near Bangkok Area and then catch a flight direct to the south sea with the shorten lead times using our service. As the pilot project, the company will start with 4 flights per day in Q1,Q4 and 2 flights per day in Q2,Q3.

- **Charter flight**

Period	**Q1** (Jan-Mar)	**Q2** (Apr-Jun)	**Q3** (Jul-Sep)	**Q4** (Oct-Dec)
Capacity	692	519	516	931
Passengers	692	519	516	931
Load Factor	100%	100%	100%	100%

Table 4-26 Fleet Planning for the Charter flight in year 2006

In the year 2006, we plan that it will be more customers to use our charter flight services. We expect that, at least 516 people in the low season and 692 people in the high season.

4.4 The Aircraft specification:

From the airline concept and fleet planning, we got the aircraft specification as the following:

- Short Range
- Fast
- Low Capacity
- High Schedule
- Low fuel consuming
- Low maintenance cost

4.5 Base Planning

As the pilot, first the company plans to have a ground base at Bangkok, Phuket international airport and others support airports.

The company will provide the ground officers to provide convenience, facilities and security to the passengers at our base as the following:

Bangkok

Bangkok, which is our marketing office, the ground services planning are:

Station Manager	1	Person
Assistant Station Manager	1	Person
Traffic Officers	3	Persons
Sales representative	4	Persons
Worker(Baggage worker)	4	Persons

Phuket

Phuket, which is our marketing and operating office, the ground services planning are:

Station Manager	1	Person
Assistant Station Manager	1	Person
Traffic Officers	4	Persons
Sale Representative	3	Persons
Worker(Baggage worker)	4	Persons

Others Station

Station Manager	1	Person
Assistant Station Manager	1	Person
Traffic Officers	3	Persons
Sales representative	2	Persons
Worker(Baggage worker)	3	Persons

4.6 Aircraft Selection

From the aircraft specification, we got the 2 aircraft that were nominated.

- ATR 42
- Fokker 28
- Jet Stream 31

4.6.1 ATR 42 **(Figure 4-1 ATR)**

Power plants

ATR 42-300 - Two flat rated 1340kW (1800shp) Pratt & Whitney Canada PW120 turboprops driving four blade c/s Hamilton Standard propellers. ATR 42-320 - Two flat rated 1417kW (1900shp) PW121s. ATR 42500 - Two PW127Es derated to 1610Kw (2160shp) driving six blade RatierFagiec/Hamilton Standard props.

Performance

ATR 42-300 - Max cruising speed 490km/h (265kt) economical cruising speed 450km/h (243kt). Range with max fuel and reserves at max cruising speed 4480km (2420nm), or 5040km (2720nm) at economical cruising speed. ATR 42-320 - Same as ATR 42-300 except max cruising speed 498km/h (269kt). ATR 42500 - Cruising speed 563km/h (304kt). Max range 1850km (1000nm).

Weights

ATR 42-300 - Operating empty 10,285kg (22,674lb), max takeoff 16,700kg (36,817lb). ATR 42-320 - Operating empty 10,290kg (22,685lb), max take off as per 42-300. ATR 42-500 - Operating empty 11,250kg (24,802lb), max takeoff 18,600kg (41,005lb).

Dimensions

Wing span 24.57m (80ft 8in), length 22.67m (74ft 5in), height 7.59m (24ft 11in). Wing area 54.5m2 (586.6sq ft).

Capacity

Flight crew of two. Maximum passenger accommodation for 50, 48 or 46 at 76cm (30in) pitch and four abreast. Typical seating arrangement for 42 at 81cm (32in) pitch. ATR 42 Cargo – Nine containers with a 4000kg payload.

Production

As at late 1998 total orders for all versions of the ATR 42 stood at 343 with 336 delivered.

4.6.2 Fokker 28

Figure 4-2 Fokker 28

Power plant

Mk 3000 & 4000 - Two 44.0kN (9900lb) RollsRoyce RB1832 Spey Mk 55515P turbofans.

Performance

3000 - Max cruising speed 843km/h (455kt), economical cruising speed 678km/h (366kt). Range at high speed cruise with 65 passengers 2743km (1480nm), at long range cruise with 65 passengers 3170km (1710nm). 4000 - Speeds same. Range at high speed cruise with 85 passengers 1900km (1025nm), at long range cruising speed with 85 passengers 2085km (1125nm).

Weight

3000 - Operating empty 16,965kg (37,400lb), max takeoff 33,110kg (73,000lb). 4000 - Operating empty 17,645kg (38,900lb), max takeoff 33,110kg (73,000lb).

Dimension

Wing span 25.07m (82ft 3in), length 27.40m (89ft 11in), height 8.47m (27ft 10in). Wing area 79.0m2 (850sq ft). 4000 - Same except for length 29.61m (97ft 2in).

Capacity

Flight crew of two. Max seating for 85 at five abreast and 74cm (29in) pitch in Mk 4000, or 65 in Mk 3000. Mk 3000 offered with a 15 seat executive interior.

Production

Total F28 sales of 241, including some military customers. As at late 1998 approx 160 remained in commercial service. Further 10 used as corporate jets.

4.6.3 Jet Stream 31

Figure 4-3 Jet Stream 31

History

The successful Jetstream 31 owes its ancestry to the Turboméca Astazou powered Handley Page HP.137 Jetstream 1.
The HP.137 was designed as early ago as 1965, and flew for the first time on August 18 1967. Initial Handley Page production aircraft were powered by 635kW (850hp) Astazou XIVs and named Jetstream 1 (36 built), but deliveries were delayed by excess weight and drag problems. To overcome these problems Handley Page developed the Jetstream 2 with more powerful 800kW (1073shp) Astazou XIVCs. However Handley Page ran into serious financial difficulties in the late 1960s (causing the US Air Force to cancel an order for 10 Garrett TPE331 powered Jetstream C10As [3Ms]) and it folded in 1969, bringing to an end development of the more powerful Jetstream 2 and plans to market a civil version of the 3M in the USA.
Development of the Jetstream 2 however resumed in 1970 as the Jetstream 200 under the control of the newly formed Jetstream Aircraft in collaboration with Scottish Aviation. Scottish Aviation later assumed overall responsibility for the Jetstream and built a number for Britain's military. Development continued after Scottish Aviation was merged into British Aerospace in 1977, and development on the Jetstream 31 (or J31) began in 1978. The first flight of the Garrett TPE331 powered Jetstream 31 (a converted HP.137) occurred on March 28 1980. The first production aircraft flew in March 1982, UK certification was granted that June.
Subsequent development led to the Super 31, certificated in October 1988. The Super 31 or J32 features uprated engines, higher weights and better performance. The last J31/J32 was built in 1993.
Since 1997 British Aerospace Asset Management has been offering for sale or lease the J32EP (Enhanced Performance) upgrade. Its minor aerodynamic and drag improvements enhance payload range and hot and high performance.

Power plant

J31 - Two 700kW (940shp) Garret TPE33110 turboprops driving four blade constant speed propellers. Super 31 - Two 760kW (1020shp) TPE33112UARs.

Performance

Cruising speed 482km/h (260kt), long range cruising speed 426km/h (230kt). Initial rate of climb 2200ft/min. Range with 19 pax and reserves 1185km (640nm), 1760km (950nm) with 12 pax or 2130km (1150nm) with nine pax. Super 31 - Max cruising speed 490km/h (264kt), long range cruising speed 452km/h (244kt). Initial rate of climb 2240ft/min. Range with 19 pax and reserves 1192km (643nm).

Weight

J31 - Operating empty 4360kg (9613lb), max takeoff 6950kg (15,322lb). Super 31 - Operating empty 4578kg (10,992lb), max takeoff 7350kg (16,204lb).

Dimension

Wing span 15.85m (52ft 0in), length 14.37m (47ft 2in), height 5.37m (17ft 6in). Wing area 25.1m2 (270sq ft).

Capacity

Flightcrew of two. Main cabin seating for up to 19 at three abreast and 79cm (31in) pitch, 12 pax in a corporate shuttle configuration, or nine in an executive layout.

4.6.3 Selection Criteria

From the fleet planning, then we will provide the aircraft that suitable for our fleet. The study is starting with the aircraft specification. Then we set up criterion for the selection, after that, weigh each criterion to find out the most suitable aircraft.

In the study, the three possibly aircraft are the ATR42, Jet Stream31 and Fokker 28. The selection is done by, ranking which aircraft has the most specification fit with our quantity criteria will get the range +,-,0 respectively.

Criteria	ATR42	Jet Stream 31	Fokker 28
Range(1000-1500km.)	0	+	-
Average Cruise Speed (250-300 knt)	+	+	-
Capacity (20-30 passenger)	+	+	0
Weight maximum take off (15,000-18,000 lb)	0	+	-
Total	+3	+4	0

Table 4-27 The aircraft selection criterion

Because, our airline concepts are fast, high frequencies and safe, so, we require for the aircraft that has low fuel consuming and less capacity. Furthermore, the routes of flights are quite short, only 40 miles for Phuket to Krabi, so the high capacity and very high speed are not necessary. Comparing between the three aircraft, the Jet Stream 31 is the most appropriate aircraft for our new airline.

After the aircraft selection, it was necessary to make a decision on purchasing or leasing. Because, we operated only on the short route and limited the scope of flight in the Southern part of Thailand, so we unable to buy the new aircraft. The choices were purchasing for the second hand or leasing the aircraft.

Moreover, it is the company policy to lease the aircraft. Since it is too risk to purchasing the new one, it required for the huge amount of thousand millions compared with those leasing only 800,000 Baht/aircraft/month.

4.7 Aircraft Maintenance

4.7.1 Introduction

One image that very important on the airline business is safety. Since, the aircraft is operation on the air, so, we unable to maintenance them on air. So the aircraft maintenance is different from other kinds of transportation carriers. The airline has to maintenance their aircraft under the regulation of International Civil Aviation Organization, Aircraft manufacturers and also Department of Aviation Thailand.

There are three types of aircraft maintenance which are :

- Flight hour maintenance
- Flight Cycle maintenance
- Flight calendar maintenance

Each aircraft will be set to which kinds of those three types, depend on the specific by the aircraft manufacturers. The parts, which are crucial for the safety of the flight mostly specified, depend upon the flight hour or the frequencies of the flight. The others may depend on the calendar.

4.7.2 Maintenance Unit in Thailand

There are two familiar aircraft maintenance units in Thailand, those are:

Thai Airways International Limited

Started in 1969 as a regional airline flying nine Asian routes, the national airline has now become an international carrier, with worldwide network routes covering 52 destinations in 36 countries. To maintain market share in global competition, THAI has recently developed various "code sharing" alliances with several major international carriers including the Lufthansa German Airline (LH), United Airline (UA), Scandinavian Airline (SK), Ansett Australia Airlines (AN), Japan Airlines (JL), Varig Brazilian Airways (RG), and Air New Zealand.

THAI Existing Fleet:

In 1998, the THAI fleet consists of the following aircraft:

Type A/C:	TT A/C:	Type of Engine:
ATR-42	2	Pratt & Whitney 121
ATR-72	2	Pratt & Whitney 124
A330-300	10	Pratt & Whitney 4164
A300-600	6	CF6-80C2A1
A300-600	2	CF6-80C2A5
A300-600	8	Pratt & Whitney PW4158
A300-B4 (AB4)	7	CF6-50C2(S/N)
A310-200	2	CF6-80C2A2
MD-11	4	CF6-80C2D1F
B737-400	11	CFM 56-3C-1
B777-200	8	RB211-Trent-875-17
B747-300	2	CF6-80C2B1
B747-400	12	CF6-80C2B1F
Total	77	

THAI will reduce its types of its aircraft from 14 to six and types of engines from 11 to six. The remaining types of aircraft are Boeing 737-400; Boeing 737-500; Boeing 777 (Stretch); Boeing 747-400; Airbus A330-300, and Airbus A330-600. Rolls Royce; Pratt & Whitney, and GE engines power the THAI fleet.

THAI, through its technical department, has established a wide-body maintenance and repair center at Bangkok International Airport (Don Muang) to carry out line maintenance and repair of its own fleet and as well as other commercial airlines. To cope with the increasing demand for aircraft maintenance, THAI, in 1996, invested about three billion Baht (US$75 million) for the construction of the Second aircraft maintenance center at U-Tapao., The construction of this facility was completed in May 1998. About 430 workers have been recruited and trained for jobs at this center, and steps have been taken to re-established it as THAI's subsidiary company engaging in the aircraft maintenance business. THAI, recently, signed an agreement with Rolls-Royce to build a new building which is aimed to accommodate the 14 Boeing B777 series in its fleet. The new building will enable the national carrier to perform tests on large aircraft engines including the Rolls-Royce Tren 800 series. The Tren 800 is common to THAI's B777-200 and B777-300 aircarft. The facilities will also be able to test the Tren 500 and 8104 engines for any future Airbus A-340-500 models and Boeing B777-200X ulta-long-range aircraft.

As the most modern, efficient and comprehensive service facility in the region, THAI is the only maintenance center in Southeast Asia capable of carrying out complete structural, hydromechanical, engine, instrument, radio, electronic and avionic overhaul for all Airbus A300-B4s, A300-600s, A310s, and Boeing B737 and B747 models. In addition, THAI is the only FAA-certified aircraft repair station in Thailand.

Line and Light Maintenance

Figure 4-4 Line and Light maintenance at Thai airways, maintenace unit

Their reputation for fast, reliable service is made possible by a huge inventory of components, including GE (CF6-50 and CF6-80) and PW4000 engines, a vast array of nearly every spare part, avionics and navigational elements, and engineers licensed to maintain and repair nearly every aircraft type used by international airlines today.

In addition to emergency repairs, THAI technicians can also carry out all the non-emergency maintenance which an aircraft would normally have to return to home base to obtain. THAI technicians have at their fingertips, a stock of GE (CF6-50 and CF6-80) ,PW and RR engines, navigation, avionics and other components, and THAI

Technical Department's huge inventory of nearly every spare part. In keeping pace with Bangkok's growth as a regional aviation hub, Light Maintenance Facilities now include a double bay and a single bay enabling THAI Technical Department to handle several aircraft at the same time

Heavy Maintenance

Figure 4-5 Heavy Maintenance at Thai airways

The recently expanded facility includes additional bays to test and repair or overhaul airframes , engines, hydromechanical and IERA components, and interior fittings for the new generation of aircraft now flying in today's fleets

Component Overhaul

The maintenance of hydromechanical, computer, electronic, and avionics components is one of the biggest, most expensive concerns for today's airlines. Airlines need a comprehensive facility capable of maintaining components to international standards while offering the lowest price possible. Many airlines have found the answer to their needs in THAI Technical Department.

Figure 4-5 The Component Overhaul

THAI Technical Department is capable of handling maintenance requirements for most Boeing, Airbus, and McDonnell-Douglas models, with special competence in Boeing and Airbus and others which comprise the bulk of our fleet.

Because they stock a wide range of precision components we can replace a plane's malfunctioning unit within hours, saving the airline a trip to home base. In their hydromechanical shop, performance tests are conducted using advanced diagnostic

equipment with CRT readouts and printouts for precise checks. Our Main Engine Control (MEC) test stand is just one example of our highly sophisticated equipment.
Built to strict FAR class 2 standards, our hermetically sealed IERA work shop employs the latest Automatic Testing Equipment with VME computers to give us a 68-programme test capability. With them, they can analyze all avionics, including navigational components and on-board central computers for the A300-600, A310, A330, B777, B747-400 , B737-400, MD-11 series and others.

Engine Overhaul

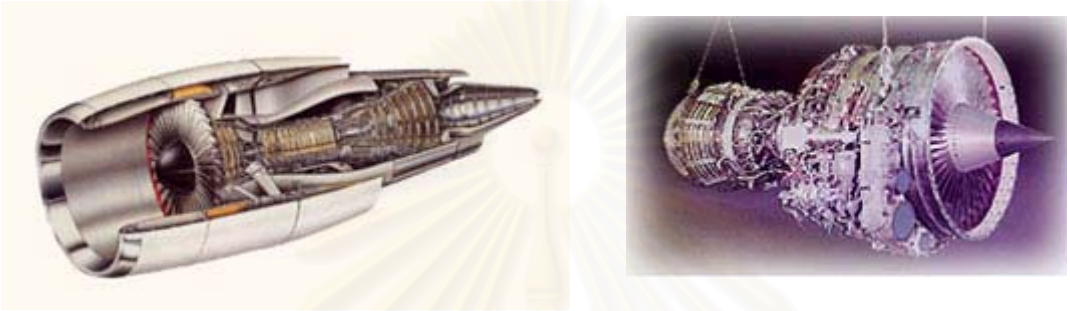


Figure 4-6 Engine overhaul at Thai airways

In our engine repair shop they strip an engine to its smallest components. We then utilize the latest Digital Electronic Automation three-dimensional measuring equipment to conduct diagnostic tests. THAI Technical Department also employ the more traditional non-destructive testing methods including ultrasonic, eddy current, , X-ray, and magnetic particle equipment.
In the workshops, the chemically and mechanically clean, repair, and/or create all parts, or replace them from our inventory of 200,000 line items. They can plasma coat metals using an advanced model molten metal spray robot. They use a Macromet II to test hardness of metal component surfaces. Among the precision equipment is the biggest Vertical Turret Lathe ever made. The one-storey tall lathe can cut and trim metal pieces to a maximum diameter of 2.6 metres.

They also carry out computerised static and dynamic balancing of gas turbine and jet turbine engines up through the CF6 models.

On site is a test cell capable of generating a maximum thrust of 150,000 pounds. This modern facility enables them to run General Electric, Pratt & Whitney and RR (Rolls-Royce) engines to full power while executing computer control checks using programmes developed by engine manufacturers. In it, we test FADEC engines and replace their components. There is also a small shaft cell to test gas turbine engines using computerised testing equipment.

Despite the advanced facilities and equipment, THAI Technical Department is able to offer extremely attractive prices for its services. Moreover , low manpower costs mean that more personnel can be assigned to carry out testing and repairs in order to speed the completion of each job.

Military Aircraft

The Royal Thai Air Force (RTAF) combat squadrons are currently made up of 36 F16 A and B tactical fighters; 8 F5 A and B; one RF-5A; 39 F5 E/F. RTAF's other air assets include 36 L39ZA/ART Turbo-prop advanced training aircraft; 22 PC-9 advanced training aircraft; 24 Airtrainers for basic training; 11 T-37 B/C light training aircraft; 21 light/medium transport airplanes; 12 heavy transporters, and 27 troop/passenger aircraft.

RTAF Aircraft Fleet:

The type of aircraft and their engines used are as follows:

Type A/C:	**TT A/C:**	**Type of Engine:**
F5 A/B & RF-5A	8	J85-GE-13 C/D
F5 E/F	37	J85-GE-21 B
F16 A/B	28/8	P100-PW-200
L39 ZA/ART	37	A1-25TL
OV-10C	19	T76-G-412,13,16,17,18,19
AU-23A	22	TPE 331-1-101F
C-47	6	R-1830-90D
C-123K	2	J85-GE-17
R-2800-99W		
AVRO 748	6	DART MK 533, 534, 535-2
MERLIN IV A	3	TPE 331-3U-304G
ARAVA	3	PT6A-34
C130H/-30	6/6	T56-A-15LFE
NORMAD N22B	22	Allison 250-B17C
Boeing 737-200	1	TJ8D-15A
Boeing 737-400	1	CFM56-3C-1
Laerjet 35A	1	TFE 731-2-2B
Air Bus 310-300	1	PW4152
G-222	4	T64/P4D
T-37 B/C	7	J69-T-25A
T-41D	7	IO-360D
Marchetti	11	O-540-E4A5
Airtrainer CT-4A	23	IO-360-HB, HP-9(6)
Fantrainer 400/600	10/13	Allison 250-C20E/C30
Pilatuc (PC-9)	26	PT6A-62
Cessna 150 H/L	4	O-200-A
*BT67	6	PT6A-67R
Bell 212	23	PT6T-3B
Bell UH-1N	2	T400-CP-400
Bell UH-1H	19	T53-L-13B
Bell 412HP	3	PT6T-3BE
Bell 412EP	4	PT6T-3DF
Bell 206B3	6	250-C20J
Sikorsky	13	PT6T-6

The RTAF maintains an aircraft maintenance and repair center at its Aeronautical Engineering Department, which carries out all line maintenance and repair services for its own fleet. However, major aircraft engines overhauls are sent to offshore contractors. The RTAF's actual aircraft repair/maintenance budget in 1999 was Baht 2,975 million (US$74 million). Approximately 60 percent or Baht 1,785 million (US$45 million) of the services were carried out at the Aeronautical Engineering

Department while the rest was handled either by Foreign Military Sales (FMS) or offshore repair stations.

4.7.3 Maintenance design decision

From the study, the management committee has a plan about the maintenance as the following:

Maintenance Level	Responsibility	Remark
Spare part change	Self-Maintenance	Cost effective
Line and Light Maintenance	Thai air ways	Fast and reliable service Strategic alliance
Overhaul Maintenance	British Aerospace	Under contract

Table 4-28 The company design decision on maintenance

4.8 Airline Costing

The costs of supplying airline services are an essential input to many decisions taken by airline manager. In airline planning, cost information is required for three purposes. First, airlines require an overall breakdown of their total expenditure into different cost categories as a general management and accounting tool. Secondly, an assessment of costs is essential in any evaluation of investments, whether in new aircraft or new routes or services. Lastly cost identification is crucial in the development of pricing policies and pricing decisions.

4.9 Cost Structure

According to Rigas Dogain, The economics of international airline, the cost structures are categorized into direct operation cost and indirect operation cost.

4.9.1 Direct Operation Cost

Flight operation

- **Crew** These costs are allowances, pension,perdium, insurance and any other social welfare payment. This item depend on the flight hour.

- **Fuel and oil**

The major cost element of flight operations is fuel. Fuel consumption varies considerably from route to route in relation to the sector lengths, the aircraft weight, wind condition, the cruise speed and so on. The oil on a particular then calculated from the number of engines on the aircraft flying on route multiplied by the hourly oil consumption for that engine and by the block time. For turbo prop aircraft there is additional expenditure on water methanol, which is used to boost engine power at take off. This is very small cost element, which can be directly related to the number of take off per route. Fuel and oil costs include all relevant taxes and duties, such as taxes on fuel or oil levied by government.

- **Leasing fee**

For the new entrant of this business, it is ver risk to purchasing for new aircraft. Leasing can reduce this risk. If the business run well, then, may be the company, to buy our own aircraft. The leasing fees are paid every month until the end of the contact. The project life is five year equal to the contract life.

- **Maintenance and overhaul**

Total maintenance costs cover a whole series of separate costs, related to different aspects of maintenance and overhaul. The maintenance cost including:

- Engineering staff cost
- Spare parts
- Maintenance

However, as said before, there are three levels of maintenance, which are line and light maintenance, heavy and overhaul maintenance. Under the contract with the leasing company, the cost of light and heavy maintenance, we have to pay ourselves. But, for the overhaul maintenance, it is under the responsibility of the leasing company.

For the maintenance cost, we have assigned the operation equal to 5,000 Baht per operating hour. These come from the:

-Engineering staff cost: average 1000 Baht/hour
-Spare parts: average 2000/ Baht/hour
-Maintenance: average 2000/Baht/hour

Indirect Operation Cost

- **Insurance**

Normally, the insurance premium paid by airline paid by an airline is calculated as percentage of the purchase price. The annual premium may be between 1.5% and 3% depending on the airline. If the airline want to be covered against terrorist or if it is operating in or through the area where there is arm conflict, an additional premium of up to 2% may needed to be paid. The annual premium, which is fixed can be converted into an hourly cost by dividing it by the project aircraft utilization, that is, by the total number of block hours that each aircraft is expected to fly during the year.

- **Office expenses**

There are the general administrative costs, These costs are generally relatively small element of an airline's total operating costs. This is because, where overhead costs can be related directly to a particular function or activity within an airline(such as maintenance or sales) then they can allocated to those activities.

- **Promotion and sales**

Such costs include all expenditure, pay, allowance, etc., related to staff engaged in ticketing, sale and promotion activities as well as all office and office accommodation costs arising through these activities. The cost of all advertising and of any forms of promotion such as familiarization visit by journalist or travel agents, also fall under this heading.

- **Airport Ground expenses**

General and ground cost are all those cost incurred in providing an airline services at an airport other than the cost of landing fees and other airport charges. In addition there will be the costs of ground handing equipment, of ground transport, of building and officers and associated with facilities machine such as computer, telephone, and so on. There will also be cost from the maintenance and insurance of each station's building and equipment. Rent may have to be paid for some of the properties used. By far the largest expenditure on station on station and ground staff and facilities inevitably occurs at an airline home base.

- **Training**

Training cost are including the flight crew, officers as well as engineering training.

- **Salary**

The details of cost calculation are illustrated as the following:

4.9.1 Year 2001

In year 2001, which is the initial of the project. It is the time for preparation for the ground services. Aircraft leasing deposit and equipment acquisition including the training.

Because the project will start in the end of year 2002, it required the initial investment that is illustrated in Table 4-29

YEAR 2001

INVESTMENT

	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Lease deposit	4,800,000						**4,800,000**
Equipment acquisition		2,000,000					**2,000,000**
Training							**2,000,000**
Others		8,000,000					**8,000,000**
INVESTMENT	4,800,000	12,000,000	-	-	-	-	**16,800,000**

Table 4-29 Initial investment in 2001

4.9.2 Year 2002

Type of aircraft = Jet Stream 32

Capacity = 19 Seats

No. of aircraft = 2

Operating Cost (Baht/ Hour)		
Fuel and Oil	=	3,000
Maintenance & Parts	=	5,000
Overhaul Reserves	=	3,000
Crew	=	1,000

Flight time		**(Min)**
Phuket- Krabi	=	18
Phuket- Ranong	=	35
Phuket-Nakorn	=	35
Phuket-Chumporn	=	50

Fare		**(Baht)**
Phuket- Krabi	=	600
Phuket- Ranong	=	1,200
Phuket-Nakorn	=	1,200
Phuket-Chumporn	=	2,500
Charter/Hour	=	35,000
Landing Fee	=	600

Indirect Operation Cost

(2002)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Salary									449,000	449,000	449,000	449,000	**1,796,000**
Office Expenseses								50,000	50,000	50,000	50,000	50,000	**250,000**
Crew Salary								300,000	300,000	300,000	300,000	300,000	**1,500,000**
Insurance							60,000	60,000	60,000	60,000	60,000	60,000	**360,000**
Promotion &Sale					100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	**800,000**
Parking Fee										32,000	32,000	32,000	**96,000**
Phuket airport expense								50,000	50,000	50,000	50,000	50,000	**250,000**
Krabi airport expense								15,000	15,000	15,000	15,000	15,000	**75,000**
Nakorn airport expense								15,000	15,000	15,000	15,000	15,000	**75,000**
Ranong airport expense								15,000	15,000	15,000	15,000	15,000	**75,000**
Chumporn airport expense								15,000	15,000	15,000	15,000	15,000	**75,000**
Bangkok airport expense													-
Training Cost									2,000,000	1,000,000			**3,000,000**
Miscellenus					50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	**400,000**
Total Indirect OperationCost					**150,000**	**150,000**	**210,000**	**670,000**	**3,119,000**	**2,151,000**	**1,151,000**	**1,151,000**	**8,752,000**

Direct Operation Cost

(2002)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Usage / Day / aircraft										0.50	2.24	2.68	
Landing / Day										3	20	24	
Fuel & Oil										93,000	402,600	498,920	994,520
Maintenance & Part										155,000	671,000	831,533	1,657,533
Overhaul Reserve										93,000	402,600	498,920	994,520
Crew										31,000	134,200	166,307	331,507
Landing fee										55,800	360,000	446,400	862,200
Aircraft Lease										1,600,000	1,600,000	1,600,000	4,800,000
Direct Operation Cost										**2,027,800**	**3,570,400**	**4,042,080**	**9,640,280**

Figure 4-30 Cost estimated in year 2002

4.9.3 Year 2003

Type of aircraft = Jet Stream 32

Capacity = 19 Seats

No. of aircraft = 2

Operating Cost (Baht/ Hour)			**Flight time**		**(Min)**	**Fare**		**(Baht)**
Fuel and Oil	=	3,000	Phuket- Krabi	=	18	Phuket- Krabi	=	600
Maintenance & Parts	=	5,000	Phuket- Ranong	=	35	Phuket- Ranong	=	1,200
Overhaul Reserves	=	3,000	Phuket-Nakorn	=	35	Phuket-Nakorn	=	1,200
Crew	=	1,000	Phuket-Chumporn	=	50	Phuket-Chumporn	=	2,500
						Charter/Hour	=	35,000
						Landing Fee	=	600

Indirect Operation Cost

(2003)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Salary	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	**5,388,000**
Office Expenseses	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	**600,000**
Crew Salary	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	**4,320,000**
Insurance	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	**720,000**
Promotion &Sale	90,000	90,000	90,000	40,000	40,000	40,000	60,000	90,000	90,000	90,000	90,000	90,000	**900,000**
Parking Fee	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	**384,000**
Phuket airport expense	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	**600,000**
Krabi airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Nakorn airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Ranong airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Chumporn airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Bangkok airport expense	-	-	-	-	-	-	-	-	-	-	-	-	**-**
Training Cost	-	-	-	-	-	-	-	-	-	-	-	-	**-**
Miscellenus	50,000	50,000	50,000	50,000	30,000	30,000	30,000	30,000	50,000	50,000	50,000	50,000	**520,000**
Indirect Operation Cost	**1,201,000**	**1,201,000**	**1,201,000**	**1,151,000**	**1,131,000**	**1,131,000**	**1,151,000**	**1,181,000**	**1,201,000**	**1,201,000**	**1,201,000**	**1,201,000**	**14,152,000**

Direct Operation Cost

(2003)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Usage / Day / aircraft	4.44	4.45	4.41	3.82	3.51	3.54	3.52	3.51	3.54	4.42	4.42	4.45	**48.04**
Landing / Day	20	20	20	16	14	14	14	14	14	20	20	20	**206**
Fuel & Oil	825,350	748,160	820,700	687,480	653,300	636,720	654,590	653,300	636,720	821,810	796,290	828,500	**8,762,920**
Maintenance & Part	1,375,583	1,246,933	1,367,833	1,145,800	1,088,833	1,061,200	1,090,983	1,053,710	1,061,200	1,369,683	1,327,150	1,380,833	**14,569,743**
Overhaul Reserve	825,350	748,160	820,700	687,480	653,300	636,720	654,590	653,300	636,720	821,810	796,290	828,500	**8,762,920**
Crew	275,117	249,387	273,567	229,160	217,767	212,240	218,197	217,767	212,240	273,937	265,430	276,167	**2,920,973**
Landing fee	372,000	336,000	372,000	288,000	260,400	252,000	260,400	260,400	252,000	372,000	360,000	372,000	**3,757,200**
Aircraft Lease	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	**19,200,000**
Direct Operation Cost	**5,273,400**	**4,928,640**	**5,254,800**	**4,637,920**	**4,473,600**	**4,398,880**	**4,478,760**	**4,438,476**	**4,398,880**	**5,259,240**	**5,145,160**	**5,286,000**	**57,973,756**
Direct Cost/Hour	**19,168**	**19,763**	**19,208**	**20,239**	**20,543**	**20,726**	**20,526**	**20,382**	**20,726**	**19,199**	**19,384**	**19,141**	**239,005**

Figure 4-31 Cost Estimated in Year 2003

4.9.4 Year 2004

Type of aircraft	=	Jet Stream 32
Capacity	=	19 Seats
No. of aircraft	=	2

Operating Cost (Baht/ Hour)		
Fuel and Oil	=	3,000
Maintenance & Parts	=	5,000
Overhaul Reserves	=	3,000
Crew	=	1,000

Flight time		**(Min)**
Phuket- Krabi	=	18
Phuket- Ranong	=	35
Phuket-Nakorn	=	35
Phuket-Chumporn	=	50
Phuket-Trang	=	33

Fare		**(Baht)**	
Phuket- Krabi	=	600	1,200
Phuket- Ranong	=	1,200	
Phuket-Nakorn	=	1,200	
Phuket-Chumporn	=	2,500	
Phuket-Surat	=	1,200	
Charter/Hour	=	35,000	
Landing Fee	=	600	

Indirect Operation Cost

(2004)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Salary	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	**5,388,000**
Office Expenseses	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	**600,000**
Crew Salary	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	**4,320,000**
Insurance	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	**720,000**
Promotion &Sale	90,000	90,000	90,000	40,000	40,000	40,000	60,000	90,000	90,000	90,000	90,000	90,000	**900,000**
Parking Fee	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	32,000	**384,000**
Phuket airport expense	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	**600,000**
Krabi airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Nakorn airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Ranong airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Chumporn airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Surat Airport expenses	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Training Cost	-	-	-	-	-	-	-	-	-	-	-	-	-
Miscellenus	50,000	50,000	50,000	50,000	30,000	30,000	30,000	30,000	50,000	50,000	50,000	50,000	**520,000**
Indirect Operation Cost	**1,216,000**	**1,216,000**	**1,216,000**	**1,166,000**	**1,146,000**	**1,146,000**	**1,166,000**	**1,196,000**	**1,216,000**	**1,216,000**	**1,216,000**	**1,216,000**	**14,332,000**

Direct Operation Cost

(2004)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Usage / Day / aircraft	5.23	5.27	5.18	4.58	4.29	4.34	4.30	4.29	4.34	5.20	5.22	5.27	**57.55**
Landing / Day	22	22	22	18	16	16	16	16	16	22	22	22	**230**
Fuel & Oil	973,400	885,920	964,100	825,000	798,560	781,800	800,420	798,560	781,800	967,820	939,300	980,840	**10,497,520**
Maintenance & Part	1,622,333	1,476,533	1,606,833	1,375,000	1,330,933	1,303,000	1,334,033	1,288,000	1,303,000	1,613,033	1,565,500	1,634,733	**17,452,933**
Overhaul Reserve	973,400	885,920	964,100	825,000	798,560	781,800	800,420	798,560	781,800	967,820	939,300	980,840	**10,497,520**
Crew	324,467	295,307	321,367	275,000	266,187	260,600	266,807	266,187	260,600	322,607	313,100	326,947	**3,499,173**
Landing fee	409,200	369,600	409,200	324,000	297,600	288,000	297,600	297,600	288,000	409,200	396,000	409,200	**4,195,200**
Aircraft Lease	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	1,600,000	**19,200,000**
Direct Operation Cost	**5,902,800**	**5,513,280**	**5,865,600**	**5,224,000**	**5,091,840**	**5,015,200**	**5,099,280**	**5,048,907**	**5,015,200**	**5,880,480**	**5,753,200**	**5,932,560**	**65,342,347**
Direct Cost/Hour	**18,192**	**18,670**	**18,252**	**18,996**	**19,129**	**19,245**	**19,112**	**18,968**	**19,245**	**18,228**	**18,375**	**18,145**	**224,557**

Figure 4-32 Cost Estimated in Year 2004

4.9.5 Year 2005

Type of aircraft = Jet Stream 32

Capacity = 19 Seats

No. of aircraft = 3

Operating Cost (Baht/Hour)		
Fuel and Oil	=	3,000
Maintenance & Parts	=	5,000
Overhaul Reserves	=	3,000
Crew	=	1,000

Flight time		**(Min)**
Phuket- Krabi	=	18
Phuket- Ranong	=	35
Phuket-Nakorn	=	35
Phuket-Chumporn	=	50
Phuket-Trang	=	33

Fare		**(Baht)**
Phuket- Krabi	=	600
Phuket- Ranong	=	1,200
Phuket-Nakorn	=	1,200
Phuket-Chumporn	=	2,500
Charter/Hour	=	35,000
Landing Fee	=	600

Indirect Operation Cost

(2005)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Salary	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	449,000	**5,388,000**
Office Expenseses	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	**600,000**
Crew Salary	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	**5,400,000**
Insurance	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	**1,080,000**
Promotion &Sale	90,000	90,000	90,000	40,000	40,000	40,000	60,000	90,000	90,000	90,000	90,000	90,000	**900,000**
Parking Fee	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	**576,000**
Phuket airport expense	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	**600,000**
Krabi airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Nakorn airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Ranong airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Chumporn airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Surat Airport expenses	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Trang Airport expenses	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Miscellenus	50,000	50,000	50,000	50,000	30,000	30,000	30,000	30,000	50,000	50,000	50,000	50,000	**520,000**
Indirect Operation Cost	**1,367,000**	**1,367,000**	**1,367,000**	**1,317,000**	**1,297,000**	**1,297,000**	**1,317,000**	**1,347,000**	**1,367,000**	**1,367,000**	**1,367,000**	**1,367,000**	**16,144,000**

Direct Operation Cost

(2005)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Usage / Day / aircraft	4.74	4.77	4.77	3.46	3.26	3.26	3.26	3.27	3.26	4.77	4.78	4.28	**47.89**
Landing / Day	28	28	28	20	18	18	18	18	18	28	28	28	**278**
Fuel & Oil	1,323,700	1,202,320	1,331,140	933,000	908,300	880,800	908,300	912,020	880,800	1,331,140	1,291,800	1,195,360	**13,098,680**
Maintenance & Part	2,206,167	2,003,867	2,218,567	1,555,000	1,513,833	1,468,000	1,513,833	1,471,000	1,468,000	2,218,567	2,153,000	1,992,267	**21,782,100**
Overhaul Reserve	1,323,700	1,202,320	1,331,140	933,000	908,300	880,800	908,300	912,020	880,800	1,331,140	1,291,800	1,195,360	**13,098,680**
Crew	441,233	400,773	443,713	311,000	302,767	293,600	302,767	304,007	293,600	443,713	430,600	398,453	**4,366,227**
Landing fee	520,800	470,400	520,800	360,000	334,800	324,000	334,800	334,800	324,000	520,800	504,000	520,800	**5,070,000**
Aircraft Lease	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	**28,800,000**
Direct Operation Cost	**8,215,600**	**7,679,680**	**8,245,360**	**6,492,000**	**6,368,000**	**6,247,200**	**6,368,000**	**6,333,847**	**6,247,200**	**8,245,360**	**8,071,200**	**7,702,240**	**86,215,687**
Direct Cost/Hour	**18,620**	**19,162**	**18,583**	**20,875**	**21,033**	**21,278**	**21,033**	**20,835**	**21,278**	**18,583**	**18,744**	**19,330**	**239,352**

Figure 4-33 Cost Estimated in Year 2005

4.9.6 Year 2006

Type of aircraft = Jet Stream 32

Capacity = 19 Seats

No. of aircraft = 4

Operating Cost (Baht/ Hour)

Fuel and Oil	=	3,000
Maintenance & Parts	=	5,000
Overhaul Reserves	=	3,000
Crew	=	1,000

Flight time		**(Min)**
Phuket- Krabi	=	18
Phuket- Ranong	=	35
Phuket-Nakorn	=	35
Phuket-Chumporn	=	50
Phuket-Trang	=	33
Phuket-Hua Hin	=	80

Fare		**(Baht)**
Phuket- Krabi	=	600
Phuket- Ranong	=	1,200
Phuket-Nakorn	=	1,200
Phuket-Chumporn	=	2,500
Phuket- Surat	=	1,200
Phuket- Trang	=	1,000
Phuket- Hua Hin	=	2,800
Charter/Hour	=	35,000
Landing Fee	=	600

Indirect Operation Cost

(2006)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Salary	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	**7,200,000**
Office Expenseses	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	**600,000**
Crew Salary	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	**7,200,000**
Insurance	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	**1,440,000**
Promotion &Sale	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	**2,400,000**
Parking Fee	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	200,000	**904,000**
Phuket airport expense	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	**600,000**
Krabi airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Nakorn airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Ranong airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Chumporn airport expense	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Surat Airport expenses	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Trang Airport expenses	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	**180,000**
Hua Hin Airport expenses	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	
Miscellenus	50,000	50,000	50,000	50,000	30,000	30,000	30,000	30,000	50,000	50,000	50,000	50,000	**520,000**
Indirect Operation Cost	**1,839,000**	**1,839,000**	**1,839,000**	**1,839,000**	**1,819,000**	**1,819,000**	**1,819,000**	**1,819,000**	**1,839,000**	**1,839,000**	**1,839,000**	**1,975,000**	**21,944,000**

Direct Operation Cost

(2006)

Variable cost	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Usage / Day / aircraft	6.60	6.60	6.60	3.56	3.56	3.56	3.56	3.56	3.56	6.60	6.65	6.65	**61.05**
Landing / Day	44	44	44	24	24	24	24	24	24	44	44	44	**408**
Fuel & Oil	2,455,200	2,217,600	2,455,200	1,281,000	1,323,700	1,281,000	1,323,700	1,323,700	1,281,000	2,455,200	2,394,000	2,473,800	**22,265,100**
Maintenance & Part	4,092,000	3,696,000	4,092,000	2,135,000	2,206,167	2,135,000	2,206,167	2,135,000	2,135,000	4,092,000	3,990,000	4,123,000	**37,037,333**
Overhaul Reserve	2,455,200	2,217,600	2,455,200	1,281,000	1,323,700	1,281,000	1,323,700	992,775	960,750	1,841,400	1,795,500	1,855,350	**19,783,175**
Crew	818,400	739,200	818,400	427,000	441,233	427,000	441,233	441,233	427,000	818,400	798,000	824,600	**7,421,700**
Landing fee	818,400	739,200	818,400	432,000	446,400	432,000	446,400	446,400	432,000	818,400	792,000	818,400	**7,440,000**
Aircraft Lease	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	2,400,000	**28,800,000**
Direct Operation Cost	**13,039,200**	**12,009,600**	**13,039,200**	**7,956,000**	**8,141,200**	**7,956,000**	**8,141,200**	**7,739,108**	**7,635,750**	**12,425,400**	**12,169,500**	**12,495,150**	**122,747,308**
Direct Cost/Hour	**15,933**	**16,247**	**15,933**	**18,632**	**18,451**	**18,632**	**18,451**	**17,540**	**17,882**	**15,183**	**15,250**	**15,153**	**203,286**

Figure 4-34 Cost Estimated in Year 2006

CHAPTER 5

FINANCIAL FEASIBILY STUDY

5.1 Introduction

Financial feasibility is the studying of the amount of expenses required in the project investment, source of fund and especially, the minimum return from the investment that should be identified in this process. The cash flow, NPV of the project and internal rate of return are the keys for financial feasibility study. The sensitivity study can identify the variation of NPV due to the changing demands.

The details of financial feasibility study of this project can be summarized as the following:

5.2 Source of Fund

Source of fund of this project will be categorized into 2 parts that are:

- Shareholder equity;
- Loan

For the initial investment in year 2001, source of funds about 16.8 million Bahts will come from the shareholder equity. The others will come from the Bank loan.

The Loan might be come from :

- International Commercial Bank
- Thai Commercial Bank
- Finance

The Company has planed to joint venture with the famous finances, since our company has a plan to introduce our airline into the stock market. Regarding to the SET regulation pany that must have a consultant

From the study, it can be summarized that:

5.3 Initial Investment

- Lease deposit
- Equipment acquisition
- Assets and others
- Training
- Airport Support Cost

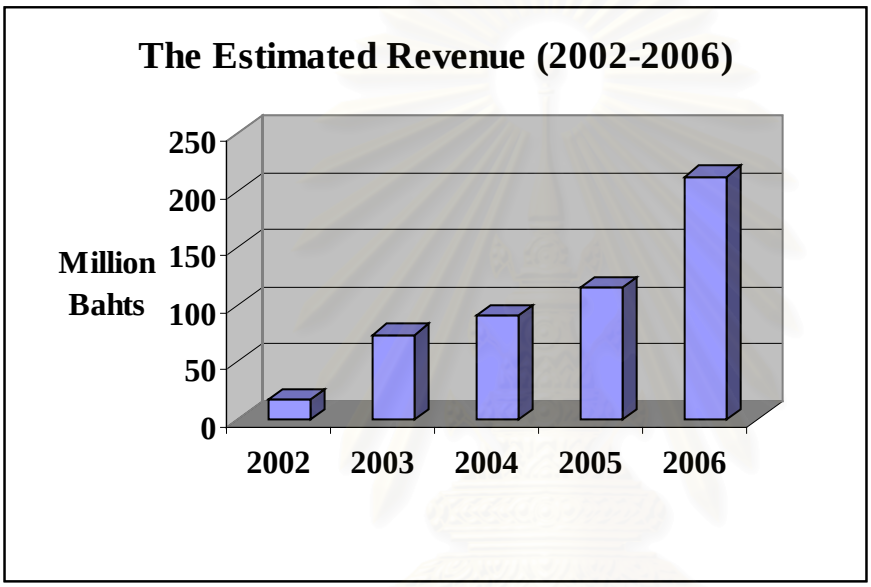
Estimated Revenue

The revenue of the project came from the revenue from

- The schedule flights
- The charter flights

Year	2002	2003	2004	2005	2006
Revenue	16.97	73.86	90.54	115.29	212.45

Figure 5-1 The estumated revenue(2002-2006)



(Remark :The details of the estimated revenue illustrated in appendixA)

5.4 Estimated Cost

In each year cost estimated came from:

- **Fixed Cost**
  - Salary
  - Office expenses
  - Crew salary
  - Insurance
  - Promotion and sales
  - Airport expenses

- **Variable Operation Cost (vary in each route)**
  - Fuel and oil
  - Maintenance & Parts
  - Overhaul reserves
  - Landing Fee
  - Aircraft lease

Remark : The details of the cost estimate illustrated in the section of Engineering feasibility Study.

5.5 Cash Flow

The estimated annual cash-flow of the project are:

In flow

Year	2001	2002	2003	2004	2005	2006
In-flow	0	16.97	73.86	90.54	115.29	212.45

Out Flow

Year	2001	2002	2003	2004	2005	2006
Out-flow	16.8	22.45	76.93	85.97	112.56	164.17

Cash Flow

Year	2001	2002	2003	2004	2005	2006
Cash Flow	-16.8	-5.48	-3.07	4.57	2.73	48.28

Unit : Million Baht

Figure 5-2 Cash-Flow in the year 2001-2006

Cash flow came from the difference between the inflow and outflow. In year 2001-2003, annual cash flow are minus. In the year 2004, the project will become recovery and turn to surplus about 4.57 million Baht. In the year 2005, the cash flow still surplus, but quite small when compared with the former year, resulted from the more leasing aircraft. In the year 2006, that will be the year-end of the project, the cash flow turns to be 48.28 million Bahts.

NPV

The calculation of the project NPV at different DCF are illustrated below:
DCF=10%

YEAR	NCI :	DCF
2002	-5.48	0.909
2003	-3.07	0.826
2004	4.57	0.751
2005	2.73	0.683
2006	48.28	0.621

Figure 5-3 NPV at DCF=10%

Net Present Value	=	27.757
Projet Investment	=	16.8
NPV of the Project	=	10.957

(UNIT : Million Baht)

DCF=20%

YEAR	NCI :	DCF
2002	-5.48	0.833
2003	-3.07	0.694
2004	4.57	0.579
2005	2.73	0.482
2006	48.28	0.402

Figure 5-4 NPV at DCF=20%

Net Present Value	=	16.67
Projet Investment	=	16.8
NPV of the Project	=	-0.13

(UNIT : Million Baht)

DCF=19.85%

YEAR	NCI :	DCF
2002	-5.48	0.834
2003	-3.07	0.696
2004	4.57	0.581
2005	2.73	0.485
2006	48.28	0.404

Figure 5-5 NPV at DCF=20%

Net Present Value	=	16.7925
Projet Investment	=	16.8000
NPV of the Project	=	-0.01

(UNIT : Million Baht)

Internal Rate of Return (IRR) = 19.850%

From figure 5-3, 5-4, and 5-5, it can be seen that, at the discount rate factor 10%, the project NPV is equal to 10.957 million Bahts. When change the DCF to 20%, the project NPV then becomes –0.13. The internal rate of return of the project is equal to 19.85% which is higher than the Bank saving account rate.

5.6 Sensitivity Study

The research also studies the sensitivity of the changing demand to identify how much the NPV was changed due to the changing demand. Moreover, from the sensitivity study, we can found out the minimum demand that will make the project feasible. Figure 5-6, 5-7 and 5-8 illustrated the NPV of the project in different demand at the DCF=10%.

Demand =40%

YEAR	NCI :	DCF	NPV
2002	-11.6	0.909	-10.545
2003	-16.07	0.826	-13.281
2004	-11.36	0.751	-8.535
2005	-17.56	0.683	-11.994
2006	10.89	0.621	6.762

Net Present Value	=	-37.593	Million Bahts
Projet Investment	=	16.8	Million Bahts
NPV of the Project	=	-54.393	Million Bahts

Figure 5-6 NPV of the project in case demand = 40%

Demand = 60%

YEAR	NCI :	DCF	NPV
2002	-8.63	0.909	-7.845
2003	9.93	0.826	8.207
2004	1.39	0.751	1.044
2005	23.01	0.683	15.716
2006	85.66	0.621	53.188

Net Present Value	=	70.310	Million Bahts
Projet Investment	=	16.8	Million Bahts
NPV of the Project	=	53.510	Million Bahts

Figure 5-7 NPV of the project in case demand = 60%

Demand = 45%

YEAR	NCI :	DCF	NPV
2002	-10.9	0.909	-9.909
2003	-9.53	0.826	-7.876
2004	-3.4	0.751	-2.554
2005	-7.42	0.683	-5.068
2006	29.58	0.621	18.367

Net Present Value	=	-7.041	Million Bahts
Projet Investment	=	16.8	Million Bahts
NPV of the Project	=	-23.841	Million Bahts

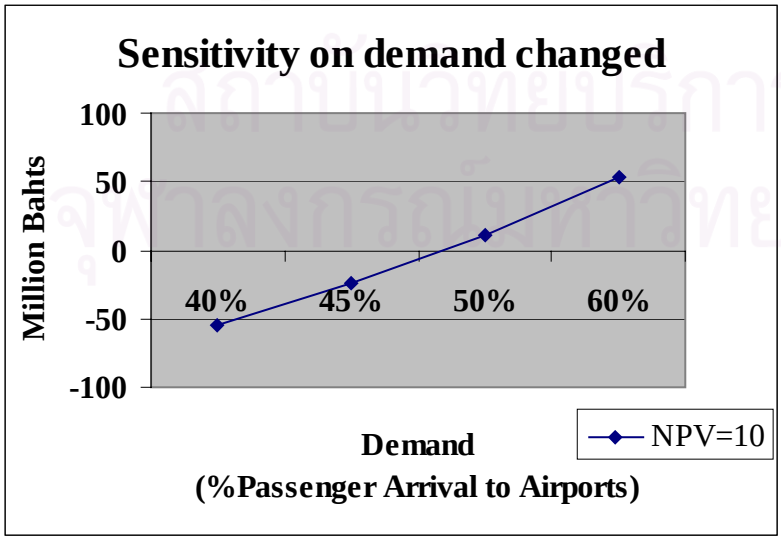
Figure 5-8 NPV of the project in case demand = 45%

NPV (10%)

Demand	Project's NPV
40%	-54.393
45%	-23.841
50%	10.957
60%	53.51

Figure 5-9 the sensitivity on the demand changed

From the sensitivity study, the minimum demands that make the project feasible are about 50% of the passenger arrival to each airport.



At NPV= 10%, the different levels of demands have changed the project's NPV, illustrated in the figure 5-9

In case, demands are 40% of the total passenger arrival to each airport, the NPV was equal to -54.93. That means, the project was not feasible. If the demands had changed to 50%, the NPV of the project was about 10.957. It could be summarized that, the minimum demands should be the amount between 40% and 50% of the estimated passenger arrival to each airport in each year. Let tried the demands 45%, the NPV still minus. In another word, to make the project feasible the minimum demands should be at least 50% of the passenger arrival to each airport in each year.

The only 50% of the total passenger arrival to airports that are expected to be our customers are possible. Since, in the demand-estimated process, we just only focused on the passenger arrival by air transportation mode. Indeed, there will be the passengers from others mode of transportation like car, bus or cruise that will be our customers.

For changing the demands to 60%, the project NPV was sharply increased to 53.31 million Baht. Only the 10% increasing of demands, has established the 43.44 million Bahts increasing of the project NPV.

CHAPTER 6

SUMMARY & RECCOMENDATIONS

This research purposes to study the feasibility of the Aerothai's project to establish an airline in Thailand.

In the marketing feasibility study, the methodology started with the SWOT analysis to find out the critical success factors in the airline business. Then the location analysis, the market situation, market segmentation, the target market and the marketing mixed were identified respectively. The outcome showed that the southern part of Thailand has been the most appropriate location base due to its territory that attracts many of foreign tourists. Moreover, in the southern part, the air transportation was the most convenience mode. It was appropriate to set up an airline in the south rather than other parts since there was less short route provided by the Thaiways in this region. From the market segmentation, we classified the market into local and foreign market. Our target market was the foreign tourists markets, which had the more purchasing power, and have limited time for travelling.

From the engineering feasibility study, the aircraft using in our project should be short range, convenience, under high frequencies and save cost. It was the Jet Stream 31 that its performance was matching to our specification. After we got the type of aircraft, then the fleet planning was established. The fleet planing should be synchronized with the cost calculation because how well we can plan the fleet that means a great amount of profit were generated. The cost calculation must be precise because it has an effect to our profit. The fare has been fixed under the regulation of IATA, 12 Baht/Nautical mile. For the routing, this airline plans to distribute the tourists to the others clean and clear environment, so the route will connect Phuket with Krabi, Ranong, and others.

From the financial feasibility study, the project will feasible, under the demand of 50% of the arrival passenger. The company will be deficit in the first 3 years. Then it will turn to be surplus in the year 2005and 2006. Until the5 years project life, with the 10% discount factor the project NPV would be 10.95 million Baht with the internal rate of return 19.85% .

It can be summarized that the Aerothai's project to set up an airline in Thailand was feasible in marketing, engineering and financial aspects. From the study, suggested that, the minimum demand in each route should not be lower than the 50% of the passenger's arrival to each airport. However, these amount were possibly since, we had only focus on the customers that arrival by plane. Indeed, there will be some demands, which came from the others mode of transportation like, car, bus or cruises. From the study, to set up an airline, the initial investment was about 16.8 million Bahts. This study is very important for Aerothai to investment in the new business. The results from the marketing, engineering and financial feasibility study have ensured that the companies will not loss from the investment.

6.1 Airline Overview

Objective	**:**	Establish for purpose of tourism to distribute the tourists from Phuket to the others clean and unspoiled environment with *fast, convenience and economical.*
Concept	**:**	Safe, Fast, Convenient and Economical
Location	**:**	Southern part of Thailand - Marketing office base at Don Maung Airport - Base at Phuket for operation and marketing
Operation	**:**	Short term - Shuttle Services and Charter flight - Codesharing Long Term - Expand to the Adjacent airport - Fully-Codesharing
Route of Flight	**:**	Phuket-Krabi-Phuket Phuket-Nakorn Sri-Phuket Phuket-Ranong-Phuket Phuket-Chumporn-Phuket Phuket-Surat-Phuket Phuket-Trang-Phuket Phuket-Hua Hin-Phuket
Target Market	**:**	Foreign tourist market
Type of Aircraft	**:**	Jet Stream 31 (Leasing)
Fare Rate	**:**	**12 Baht/ 1 nautical miles**
Initial Investment	**:**	**16.8 Million Baht**
Project NPV	**:**	**10.957 Million Baht**
Project Life	**:**	5 years
Source of Fund	**:**	Shareholder equity and Bank loan (Krung Thai Bank)

6.2 Marketing Feasibility Study

6.2.1 SWOT Analysis

From the SWOT analysis, we got our critical success factors which are:

- The demand of air transportation that continue to growth every year (from the statistic of International Air Transportation Association
- The deregulation in aviation policy
- The government policy to support the Thailand's tourism
- The trend of globalization The company expertise in aviation industry
- The reliable safety air transportation service
- The cost effective
- The brand name

6.2.2 Location Analysis

From the study, the possibility for our location based in Thailand are the South, North, and North-East, *but the most appropriate location is the southern part of Thailand* since it has a great amount of tourists that trend to growth every year. Unlike other parts of Thailand, the south has been deregulated from the government to set up an airline. In the North and North East, there was a high level of monopolization by the Thai airways. Moreover, in the south, the air transportation is the most convenient and safe, since the roads to the south are quite dangerous when compared with the other parts and there has no train direct to Phuket that is the central province in the south.

6.2.3 Market Situation

The trend of the tourism in the Southeast Asia is now continuing to growth considerably. Because of the economic situation, that offers the tourists from Europe, America and other parts of the world to have the more purchasing power for traveling in this region due to the gain in foreign exchange.

Thailand one of the countries in the Southeast Asia, So, the tourist market in Thailand is continuing to growth until the neighbors still have the uncertainty in economic, politic and social, that is the great advantage for Thailand.

The big tourism markets of Thailand are Bangkok and Phuket, because both of them have the most direct international flight arrival.

Phuket was almost the destination of the foreigner that arrival to Thailand. Especially between September and April of the years, there are some problems from the over crowded. In the near future, Phuket will be the door to open to the other neighbors like Krabi or Surat.

The main traffic will come from repeat visitors to Phuket who wish to visit other less crowded, pristine resorts such as Krabi, Ranong, Satun and Nakorn Si Thammarat as complimentary destinations during their stay.

Our airline will initially operate a shuttle service to cover the major resorts in southern Thailand to provide immediate and convenient connections with Phuket International

Airport. We plan to distribute the tourist to the others clean and silent, natural beach in the southern part of Thailand like Krabi, Ranong or Trang.

6.2.4 Targeting Customer and Segmentation

We segmented the market into the domestic market and foreign market.

Domestic Market

For the domestic market, we segment the market into 2 main groups, including:

Ω **Tourist:**

They are:
→ High income
→ Normally, the families tours
→ Both individual and group tour
→ Long stay
→ Convenience is the key

Ω **Business:**

They are:
→ High income
→ The business men
→ Short stay (1-2 days)
→ Normally, individual
→ Punctuality is the key

Foreign Market

For the foreign market, they are the international tourist those by or the individual and tour operators. We segment this market by the residents into 3 main groups.
They are the tourists from:

Ω **Europe**
Ω **Asia**
Ω **Oceania**

The arrival tourists to Phuket are mostly those who came from Europe, Asia, and Oceania respectively.

From the market segmentation, our airline will focus on the foreigner tourist market. Since, it offered the great demand of passengers with the high purchasing power. We defined our customers as the persons who:

- Individual
- Overseas Tour Operators

- Local Tour Operators
- Travel agencies
- Overseas airlines
- National airlines
- Hotels

6.2.5 Marketing Mix

Product

- **Safe and on time operations** are our main objectives. We guarantee the flight safety with the reliability of our aircraft and the air traffic control service, which we have provided for all over 50 years.

- **Good service,** ground crew will ensure fast and efficient service to our passengers at various airports. For in flight service, our people work as a team to deliver our passengers safe, on time and comfortable air transportation.

- **Route of flight,** at first, will connect Phuket to the other adjacent provices like Krabi, Surat, Ranong, Trang and Hat Yai. In the near future, will extend to the neighbors countries like Indonesia, Singapore and Burma. The route analysis will be in the next section.

- **Schedule** will initially operate a shuttle service to cover the major provinces in southern Thailand to provide immediate and convenient connections with Phuket International Airport. We also provide the charter flights for tour operators organizing various tour groups including golftour, scuba diving etc Remark, the analysis will be in the next section.

- **Image,** we have the image of safety under the name AEROTHAI who is only one to provide air traffic control service in Thailand.

- **Price**

In Thailand, the pricing for the services in airline industry have depended on the government. For the domestic market, it has been fixed by the Department of Aviation (DOA). And for the international markets have been fixed by the International Air Transportation Authority (IATA), under the of the international governments.

Schedule Flights

The price are : 12 Baht / Nautical Mile

Route	Fare (Bahts)
Phuket-Krabi	600
Phuket-Trang	1,000
Phuket-Satun	1,200
Phuket-Ranong	1,200
Phuket-Nakorn	1,200
Phuket-Chumporn	2,500
Phuket-Hua Hin	2,800

Charter Flights

: 35,000 Bahts/Hour

Place

It is necessary to emphasize marketing collaboration with travel agent, tour operators, and airlines in form of joint marketing.

Marketing efforts will be concentrated through the following channels:

- Leading tour operators from overseas offering Thailand as a major destination will also be contracted by the company to offer their services together with local tour companies representing overseas organizations in Thailand and those acting as inbound handlers.

- Interline relationship will be established to facilitate convenient booking and connections for passengers.

- Cruise operators who arrange one way cruise between Phuket and other resort destinations.

- Charter flights for tour operators organizing various tour groups including golf-tour, scuba diving etc.

We will distribute our product through the market through the sale people, direct sale, on line e-commerce.

- **Promotion**

Because our target customers are the foreigners to Phuket which are the individual or tour group. The promotion will concentrate on the

Campaign

For the individual :

- **The Tour Package :**

  Special offer program will be established as the tour package or one stop services like, buy tickets free rooms or free local tour. This is necessary to emphasize marketing collaboration in the form of joint marketing with the other air carriers such as Thai airway, and also with the hotel, the resort and local tour operators.

- **Mileage Plus:**

  Collaboration with the visa card to support the marketing objective by offering the mileage plus. This also support the e-commerce

For the tour group:

- Buy the tour agencies the tickets at the wholesale price. Give the more percent to the tour agent than those of paid by the competitors.

Advertising

- To create a system to link together the main web site of TAT in variable language like German or Italian.
- To co-ordinate with the Immigration office, Airport Authority of Thailand, and concerned government sector to promote tourism among transit passengers.
- To bring in tour companies a mass media, and television filming crews to visit Phuket
- To participate the travel fair in Thailand

6.3 Engineering Feasibility Study

6.3.1 Demand Forecasting

We have forecasted the demand in each route by using the statistics of passenger ’s arrival to each airport from the department of aviation Thailand. From the sensitivity analysis, at least 50% of passenger’s arrival to destination airport will make the project feasible. However, 50% of the total passenger is feasible in practical, since, there may be some passengers from other modes of transportation to use our services.

6.3.2 Type of Aircraft

The Aircraft specification:

- Short Range
- Fast
- Low Capacity
- High Schedule
- Low fuel consuming
- Low maintenance cost

From the aircraft specification then we select the most appropriate aircraft that is Jet Stream 31. At the initial project, we will first lease the 2 aircraft after that will increase to be 3 aircrafts in year 2005 and 4 aircrafts in year 2006.

6.3.3 Fleet Planning

Year 2002

Route	High Season
Phuket-Krabi-Phuket	12
Phuket-Nakorn Sri-Phuket	4
Phuket-Ranong-Phuket	2
Phuket-Chumporn-Phuket	2

Table 6-1 Fleet Planning for the Year 2002

Year 2003

Route	Number of Flight		
	High Season	Medium	Low Season
Phuket-Krabi-Phuket	12	8	6
Phuket-Nakorn Sri-Phuket	4	4	4
Phuket-Ranong-Phuket	2	2	2
Phuket-Chumporn-Phuket	2	2	2

Table 6-2 Fleet Planning for the Year 2003

Year 2004

Route	Number of Flight		
	High Season	Medium	Low Season
Phuket-Krabi-Phuket	12	8	6
Phuket-Nakorn Sri-Phuket	4	4	4
Phuket-Ranong-Phuket	2	2	2
Phuket-Chumporn-Phuket	2	2	2
Phuket-Surat-Phuket*	2	2	2

Table 6-3 Fleet Planning for the Year 2004

Year 2005

Route	Number of Flight		
	High Season	Medium	Low Season
Phuket-Krabi-Phuket	12	8	6
Phuket-Nakorn Sri-Phuket	4	4	4
Phuket-Ranong-Phuket	4	2	2
Phuket-Chumporn-Phuket	2	2	2
Phuket-Surat-Phuket	4	2	2
Phuket-Trang-Phuket*	2	2	2

Table 6-4 Fleet Planning for the Year 2005

Year 2006

Route	Number of Flight		
	High Season	Medium	Low Season
Phuket-Krabi-Phuket	16	8	8
Phuket-Nakorn Sri-Phuket	6	4	4
Phuket-Ranong-Phuket	4	2	2
Phuket-Chumporn-Phuket	4	2	2
Phuket-Surat-Phuket	6	2	2
Phuket-Trang-Phuket	4	4	4
Phuket-Hua Hin-Phuket*	4	4	2

Table 6-5 Fleet Planning for the Year 2006

6.3.4 Cost Estimating

The cost structures are categorized into direct operation cost and indirect operation cost.

Direct Operation Cost

Flight operation

- Flight crew salary and expenses
- Fuel and oil
- Leasing fee

Maintenance and overhaul

- Engineering staff cost
- Spare parts
- Maintenance

Indirect Operation Cost

- Salary
- Insurance
- Office expenses
- Promotion and sales
- Airport expenses
- Training

Year 2001

Initial investment for lease deposit, equipment acquisition and others equal 16.8 Million Bahts.

Table 6-6 Cost structure in 2002-2006

Period	2002	2003	2004	2005	2006	Project
Direct Cost	9.64	57.97	65.34	86.21	122.74	341.9
Indirect Cost	8.75	14.15	14.33	16.14	21.99	75.36
Total	18.39	72.12	79.67	102.35	144.73	417.26

Unit : Million Baht

6.4 Financial Feasibility Study

6.4.1 Investment

The initial investment required for 16.8 million Baht for the aircraft deposit and the investment in others asset.

6.4.2 Source of Fund

Source of fund will come from the shareholder equity and the Bank loan. Initial investments are mostly come from the shareholder equity.

6.4.3 Cash Flow

Year	2001	2002	2003	2004	2005	2006
In-flow	0	16.97	73.86	90.54	115.29	212.45
Out-flow	16.8	22.45	76.93	85.97	112.56	164.17
Cash Flow	-16.8	-5.48	-3.07	4.57	2.73	48.28

Unit : million Baht

Table 6-7 Cash flow of the project

6.4.4 NPV

DCF=10%

Net Present Value	=	27.757	Million Bahts
Projet Investment	=	16.8	Million Bahts

NPV of the Project	=	10.957	Million Bahts

6.4.5 IRR

IRR = **19.850%**

6.4.6 Sensitivity Study

Demand =40%

Net Present Value	=	-37.593	Million Bahts
Projet Investment	=	16.8	Million Bahts
NPV of the Project	=	-54.393	Million Bahts

Demand=60%

Net Present Value	=	70.310	Million Bahts
Projet Investment	=	16.8	Million Bahts
NPV of the Project	=	53.510	Million Bahts

Demand =45%

Net Present Value	=	-7.041	Million Bahts
Projet Investment	=	16.8	Million Bahts
NPV of the Project	=	-23.841	Million Bahts

6.5 Summary

From the project feasibility study, it can be summarized that the Aerothai's project to set up an airline in Thailand is feasible. In the marketing point of view, suggested that the southern part of Thailand is the most appropriate location base due to its territory that attracts many of foreign tourist over there. Moreover, in the southern part, the air transportation is the most convenience mode. It is easy to set up an airline in the south rather than other parts since there is less short route of Thaiways provided in this region. From the market segmentation, we classified the market into local and foreign market. Our target market is the foreign tourist markets who have the more purchasing power and have short time to travel in Thailand. To make the airline well known suggests that, the company should have a strong promotion and advertisement, since there are the strong competition within this business. Internet should be one of the distribution channels. We can promote our business through TV, radio or our web site.

From the engineering feasibility study, the aircraft using in our project should be short range, convenience, under high frequencies and save cost. We suggest the Jet Stream 31 which its performance is matching to our specification. After we got the type of aircraft, then we can plan the fleet. The fleet planing should be synchronized with the cost calculation because how well we can plan the fleet that means a great amount of profit are generated. The cost calculation must be precise because it has an effect to our profit. The fare is fixed under the regulation of IATA 12 Baht/Nautical mile. For the routing, the company plans to distribute the tourists to the others clean and clear environment, so the route will connect Phuket with Krabi, Trang, Ranong, Surat and Chumporn.

From the financial feasibility study, it is clear that the project is feasible, under the demand of 50% of the arrival passenger the company will be deficit in the first 3 years. Then it will turn to be surplus in the year 2005and 2006. Until the5 years project life, with the 10% discount factor the project NPV would be 10.95 million Baht with the internal rate of return 19.85% compared with the Bank interest now 4% for saving account.

The feasibility study for setting up an airline in Thailand is very important for Aerothai to invest in the new business. The results from the marketing, engineering and financial study have ensured that the companies will not loss from the investment. The feasibility studies not only identify the opportunity for an investment but also less the risk.

6.6 Recommendation

This thesis is the feasibility study of the settlement of airline of AEROTHAI, the assessments of feasibility in many aspects of marketing, engineering and financial. However, this thesis does not study in the detail of those results. Thus for further study on this thesis, such recommendation are mention below:

- This research just forecasts the demand by using the statistics of the passengers arrival at the destination airport. But, in reality, there are many factors that correlate to demand of air transportation such as income, GDP, international economics growth rate etc. Moreover, this research has forecasted the demand in the normal situation but in the contingency situation such as, crisis, wars the feasibility will be changed.

- This thesis focuses on only AEROTHAI to invest in the new business. However, for the further study, this research can be used as guideline for the analysis for other company who intend to invest in the airline business. Although, each industry has its own characteristics of strengths, weakness, opportunities, and threats, but this thesis will be helpful in order to provide the method of study step by step.

- This research covers the feasibility study in the marketing, engineering and financial aspects. However, for the actual implementation the study should be done in deep details.

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Appendices

APPENDIX A

Estimated Revenue

Year 2002

Phuket-Krabi	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Filghts											6	6	
Flight time (min)											18	18	
Aircraft Utilization(Hour)											54	55.80	110
Fare											600	600	
Load Factor											77%	84%	
Route Revenue											**1,580,040**	**1,781,136**	**3,361,176**

Phuket-Nakorn	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Filghts											2	2	
Flight time (min)											35	35	
Aircraft Utilization (Hour)											35.00	36.17	71
Fare											1,200	1,200	
Load Factor											74%	74%	
Route Revenue											**1,012,320**	**1,046,064**	**2,058,384**

Phuket-Ranong	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Filghts											1	1	
Flight time (min)											35	35	
Aircraft Utilization (Hour)											17.50	18.08	36
Fare											1,200	1,200	
Load Factor											63%	74%	
Route Revenue											**430,920**	**523,032**	**953,952**

Phuket-Chumporn	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Filghts											1	1	
Flight time (min)											50	50	
Aircraft Utilization (Hour)											25.00	51.67	77
Fare											2,500	2,500	
Load Factor											63%	74%	
Route Revenue											**897,750**	**1,089,650**	**1,987,400**

Charter	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Daily Flights											0.09	0.15	
Aircraft Utilization (Hour)											2.7	4.59	7.29
Fare											35,000	35,000	
Load Factor											100%	100%	
Route Revenue											**94,500**	**155,400**	**249,900**

Year 2003

Phuket-Krabi	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Daily Filghts	12	12	12	8	6	6	6	6	6	12	12	12	
Flight time (min)	18	18	18	18	18	18	18	18	18	18	18	18	
Aircraft Utilization(Hour)	111.60	100.80	111.60	72.00	55.80	54.00	55.80	55.80	54.00	111.60	108.00	111.60	1,003
Fare	600	600	600	600	600	600	600	600	600	600	600	600	
Load Factor (50%)	84.0%	74.0%	74.0%	63.0%	47.0%	47.0%	47.0%	53.0%	47.0%	63.0%	73.0%	83.0%	
Route Revenue	**3,447,360**	**3,036,960**	**3,036,960**	**1,723,680**	**964,440**	**964,440**	**964,440**	**1,087,560**	**964,440**	**2,585,520**	**2,995,920**	**3,519,864**	**25,291,584**

Phuket-Nakorn	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Filghts	4	4	4	4	4	4	4	4	4	4	4	4	
Flight time (min)	35	35	35	35	35	35	35	35	35	35	35	35	
Aircraft Utilization (Hour)	72.33	65.33	72.33	70.00	72.33	70.00	72.33	72.33	70.00	72.33	70.00	72.33	142
Fare	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
Load Factor (50%)	74%	74%	63%	53%	42%	42%	42%	53%	42%	63%	73%	73%	
Route Revenue	**2,092,128**	**1,889,664**	**1,781,136**	**1,450,080**	**1,187,424**	**1,149,120**	**1,187,424**	**1,498,416**	**1,149,120**	**1,781,136**	**1,997,280**	**2,063,856**	**19,226,784**

Phuket-Ranong	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	2	2	2	2	2	2	2	2	2	2	2	2	
Flight time (min)	35	35	35	35	35	35	35	35	35	35	35	35	
Aircraft Utilization (Hour)	36.17	32.67	36.17	35.00	36.17	35.00	36.17	36.17	35.00	36.17	35.00	36.17	426
Fare	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
Load Factor (50%)	63.0%	63.0%	53.0%	53.0%	42.0%	42.0%	42.0%	47.0%	42.0%	53.0%	63.0%	72.0%	
Route Revenue	**890,568**	**804,384**	**749,208**	**725,040**	**593,712**	**574,560**	**593,712**	**664,392**	**574,560**	**749,208**	**861,840**	**1,017,792**	**8,798,976**

Phuket-Chumporn	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	2	2	2	2	2	2	2	2	2	2	2	2	
Flight time (min)	50	50	50	50	50	50	50	50	50	50	50	50	

Aircraft Utilization (Hour)	51.67	46.67	51.67	50.00	51.67	50.00	51.67	51.67	50.00	51.67	50.00	51.67	608
Fare	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	
Load Factor (50%)	74.0%	74.0%	63.0%	42.0%	42.0%	42.0%	42.0%	53.0%	42.0%	63.0%	62.0%	73.0%	
Route Revenue	**2,179,300**	**1,968,400**	**1,855,350**	**1,197,000**	**1,236,900**	**1,197,000**	**1,236,900**	**1,560,850**	**1,197,000**	**1,855,350**	**1,767,000**	**2,149,850**	**19,400,900**

Charter	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	0.11	0.14	0.06	0.07	0.06	0.11	0.07	0.06	0.11	0.07	0.08	0.14	
Aircraft Utilization (Hour)	3.35	3.92	1.8	2.16	1.8	3.24	2.23	1.8	3.24	2.17	2.43	4.4	32.54
Fare/Hour	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	
Load Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Route Revenue	**117,250**	**137,200**	**63,000**	**75,600**	**63,000**	**113,400**	**78,050**	**63,000**	**113,400**	**75,950**	**85,050**	**154,000**	**1,138,900**

Year 2004

Phuket-Krabi	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	12	12	12	8	6	6	6	6	6	12	12	12	
Flight time (min)	18	18	18	18	18	18	18	18	18	18	18	18	
Aircraft Utilization(Hour)	111.60	100.80	111.60	72.00	55.80	54.00	55.80	55.80	54.00	111.60	108.00	111.60	1,003
Fare	600	600	600	600	600	600	600	600	600	600	600	600	
Load Factor (50%)	84.0%	84.0%	74.0%	63.0%	53.0%	63.0%	63.0%	74.0%	63.0%	63.0%	74.0%	84.0%	
Route Revenue	**3,447,360**	**3,447,360**	**3,036,960**	**1,723,680**	**1,087,560**	**1,292,760**	**1,292,760**	**1,518,480**	**1,292,760**	**2,585,520**	**3,036,960**	**3,562,272**	**27,324,432**

Phuket-Nakorn	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	4	4	4	4	4	4	4	4	4	4	4	4	
Flight time (min)	35	35	35	35	35	35	35	35	35	35	35	35	
Aircraft Utilization (Hour)	72.33	65.33	72.33	70.00	72.33	70.00	72.33	72.33	70.00	72.33	70.00	72.33	142
Fare	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
Load Factor (50%)	74.0%	74.0%	74.0%	53.0%	47.0%	47.0%	47.0%	53.0%	47.0%	74.0%	84.0%	84.0%	
Route Revenue	**2,092,128**	**1,889,664**	**2,092,128**	**1,450,080**	**1,328,784**	**1,285,920**	**1,328,784**	**1,498,416**	**1,285,920**	**2,092,128**	**2,298,240**	**2,374,848**	**21,017,040**

Phuket-Ranong	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	2	2	2	2	2	2	2	2	2	2	2	2	
Flight time (min)	35	35	35	35	35	35	35	35	35	35	35	35	
Aircraft Utilization (Hour)	36.17	32.67	36.17	35.00	36.17	35.00	36.17	36.17	35.00	36.17	35.00	36.17	426
Fare	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
Load Factor (50%)	63.0%	63.0%	63.0%	53.0%	42.0%	42.0%	42.0%	53.0%	42.0%	63.0%	74.0%	74.0%	
Route Revenue	**890,568**	**804,384**	**890,568**	**725,040**	**593,712**	**574,560**	**593,712**	**749,208**	**574,560**	**890,568**	**1,012,320**	**1,046,064**	**9,345,264**

Phuket-Chumporn	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	2	2	2	2	2	2	2	2	2	2	2	2	
Flight time (min)	50	50	50	50	50	50	50	50	50	50	50	50	
Aircraft Utilization (Hour)	51.67	46.67	51.67	50.00	51.67	50.00	51.67	51.67	50.00	51.67	50.00	51.67	608
Fare	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	
Load Factor	84.0%	84.0%	74.0%	47.0%	47.0%	47.0%	47.0%	53.0%	53.0%	53.0%	74.0%	74.0%	
Route Revenue	**2,473,800**	**2,234,400**	**2,179,300**	**1,339,500**	**1,384,150**	**1,339,500**	**1,384,150**	**1,560,850**	**1,510,500**	**1,560,850**	**2,109,000**	**2,179,300**	**21,255,300**

Charter	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	0.2	0.28	0.1	0.1	0.12	0.22	0.14	0.12	0.22	0.14	0.17	0.28	
Aircraft Utilization (Hour)	6.2	7.84	3.1	3	3.72	6.6	4.34	3.72	6.6	4.34	5.1	8.68	63.24
Fare/Hour	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	
Load Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Route Revenue	**217,000**	**274,400**	**108,500**	**105,000**	**130,200**	**231,000**	**151,900**	**130,200**	**231,000**	**151,900**	**178,500**	**303,800**	**2,213,400**

Phuket-Surat	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	2	2	2	2	2	2	2	2	2	2	2	2	
Flight time (min)	45	45	45	45	45	45	45	45	45	45	45	45	
Aircraft Utilization (Hour)	46.50	42.00	46.50	45.00	46.50	45.00	46.50	46.50	45.00	46.50	45.00	46.50	548

Fare	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
Load Factor	74%	74%	53%	42%	42%	42%	42%	53%	42%	63%	63%	74%	
Route Revenue	**1,046,064**	**1,046,064**	**749,208**	**593,712**	**593,712**	**593,712**	**593,712**	**749,208**	**593,712**	**890,568**	**890,568**	**1,046,064**	**9,386,304**

Year 2005

Phuket-Krabi	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	12	12	12	8	6	6	6	6	6	12	12	12	
Flight time (min)	18	18	18	18	18	18	18	18	18	18	18	18	
Aircraft Utilization(Hour)	111.60	100.80	111.60	72.00	55.80	54.00	55.80	55.80	54.00	111.60	108.00	111.60	1,003
Fare	600	600	600	600	600	600	600	600	600	600	600	600	
Load Factor	84%	84%	84%	63%	63%	63%	63%	74%	63%	63%	84%	84%	
Route Revenue	**3,447,360**	**3,447,360**	**3,447,360**	**1,723,680**	**1,292,760**	**1,292,760**	**1,292,760**	**1,518,480**	**1,292,760**	**2,585,520**	**3,447,360**	**3,562,272**	**28,350,432**

Phuket-Nakorn	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	4	4	4	4	4	4	4	4	4	4	4	4	
Flight time (min)	35	35	35	35	35	35	35	35	35	35	35	35	
Aircraft Utilization (Hour)	72.33	65.33	72.33	70.00	72.33	70.00	72.33	72.33	70.00	72.33	70.00	72.33	142
Fare	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
Load Factor	84%	84%	84%	53%	53%	53%	53%	53%	53%	74%	84%	84%	
Route Revenue	**2,374,848**	**2,145,024**	**2,374,848**	**1,450,080**	**1,498,416**	**1,450,080**	**1,498,416**	**1,498,416**	**1,450,080**	**2,092,128**	**2,298,240**	**2,374,848**	**22,505,424**

Phuket-Ranong	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	4	4	4	2	2	2	2	2	2	4	4	4	
Flight time (min)	35	35	35	35	35	35	35	35	35	35	35	35	
Aircraft Utilization (Hour)	72.33	65.33	72.33	35.00	36.17	35.00	36.17	36.17	35.00	72.33	70.00	72.33	638
Fare	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
Load Factor	74%	74%	63%	53%	42%	42%	42%	53%	42%	63%	74%	74%	
Route Revenue	**2,092,128**	**1,889,664**	**1,781,136**	**725,040**	**593,712**	**574,560**	**593,712**	**749,208**	**574,560**	**1,781,136**	**2,024,640**	**2,092,128**	**15,471,624**

Phuket-Chumporn	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	2	2	2	2	2	2	2	2	2	2	2	2	
Flight time (min)	50	50	50	50	50	50	50	50	50	50	50	50	
Aircraft Utilization (Hour)	51.67	46.67	51.67	50.00	51.67	50.00	51.67	51.67	50.00	51.67	50.00	51.67	608
Fare	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	
Load Factor	84%	84%	74%	53%	53%	53%	47%	53%	53%	53%	74%	74%	
Route Revenue	**2,473,800**	**2,234,400**	**2,179,300**	**1,510,500**	**1,560,850**	**1,510,500**	**1,384,150**	**1,560,850**	**1,510,500**	**1,560,850**	**2,109,000**	**2,179,300**	**21,774,000**

Charter	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	0.2	0.28	0.28	0.2	0.2	0.22	0.2	0.24	0.22	0.28	0.32	0.32	
Aircraft Utilization (Hour)	6.2	7.84	8.68	6	6.2	6.6	6.2	7.44	6.6	8.68	9.6	9.92	89.96
Fare/Hour	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	
Load Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Route Revenue	**217,000**	**274,400**	**303,800**	**210,000**	**217,000**	**231,000**	**217,000**	**260,400**	**231,000**	**303,800**	**336,000**	**347,200**	**3,148,600**

Phuket-Surat	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	4	4	4	2	2	2	2	2	2	4	4	4	
Flight time (min)	45	45	45	45	45	45	45	45	45	45	45	45	
Aircraft Utilization (Hour)	93.00	84.00	93.00	45.00	46.50	45.00	46.50	46.50	45.00	93.00	90.00	46.50	774
Fare	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
Load Factor	84%	74%	53%	42%	42%	42%	42%	63%	42%	63%	84%	84%	
Route Revenue	**2,374,848**	**2,092,128**	**1,498,416**	**593,712**	**593,712**	**593,712**	**593,712**	**890,568**	**593,712**	**1,781,136**	**2,374,848**	**2,374,848**	**16,355,352**

Phuket-Trang	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	2	2	2	2	2	2	2	2	2	2	2	2	
Flight time (min)	33	33	33	33	33	33	33	33	33	33	33	33	
Aircraft Utilization (Hour)	34.10	30.80	34.10	33.00	34.10	33.00	34.10	34.10	33.00	34.10	33.00	34.10	402

Fare	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Load Factor	63%	63%	53%	42%	42%	42%	42%	63%	42%	63%	63%	74%	
Route Revenue	**742,140**	**742,140**	**624,340**	**494,760**	**494,760**	**494,760**	**494,760**	**742,140**	**494,760**	**742,140**	**742,140**	**871,720**	**7,680,560**

Year 2006

Phuket-Krabi	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	16	16	16	8	8	8	8	8	8	16	16	16	
Flight time (min)	18	18	18	18	18	18	18	18	18	18	18	18	
Aircraft Utilization(Hour)	148.80	134.40	148.80	72.00	74.40	72.00	74.40	74.40	72.00	148.80	144.00	148.80	1,313
Fare	600	600	600	600	600	600	600	600	600	600	600	600	
Load Factor	89%	89%	84%	63%	63%	63%	63%	74%	63%	84%	89%	95%	
Route Revenue	**5,032,416**	**4,545,408**	**4,749,696**	**1,723,680**	**1,781,136**	**1,723,680**	**1,781,136**	**2,092,128**	**1,723,680**	**4,749,696**	**4,870,080**	**5,371,680**	**40,144,416**

Phuket-Nakorn	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	6	6	6	4	4	4	4	4	4	6	6	6	
Flight time (min)	35	35	35	35	35	35	35	35	35	35	35	35	
Aircraft Utilization (Hour)	108.50	98.00	108.50	70.00	72.33	70.00	72.33	72.33	70.00	108.50	105.00	108.50	214
Fare	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
Load Factor	84%	84%	84%	53%	53%	53%	53%	53%	53%	74%	84%	84%	
Route Revenue	**3,562,272**	**3,217,536**	**3,562,272**	**1,450,080**	**1,498,416**	**1,450,080**	**1,498,416**	**1,498,416**	**1,450,080**	**3,138,192**	**3,447,360**	**3,562,272**	**29,335,392**

Phuket-Ranong	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	4	4	4	2	2	2	2	2	2	4	4	4	
Flight time (min)	35	35	35	35	35	35	35	35	35	35	35	35	
Aircraft Utilization (Hour)	72.33	65.33	72.33	35.00	36.17	35.00	36.17	36.17	35.00	72.33	70.00	72.33	638
Fare	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
Load Factor	84%	84%	63%	53%	42%	42%	42%	53%	42%	74%	84%	84%	
Route Revenue	**2,374,848**	**2,145,024**	**1,781,136**	**725,040**	**593,712**	**574,560**	**593,712**	**749,208**	**574,560**	**2,092,128**	**2,298,240**	**2,374,848**	**16,877,016**

Phuket-Chumporn	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	4	4	4	2	2	2	2	2	2	4	4	4	
Flight time (min)	50	50	50	50	50	50	50	50	50	50	50	50	

Aircraft Utilization (Hour)	103.33	93.33	103.33	50.00	51.67	50.00	51.67	51.67	50.00	103.33	100.00	103.33	912
Fare	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	
Load Factor	84%	84%	74%	53%	53%	53%	53%	63%	53%	53%	84%	84%	
Route Revenue	**4,947,600**	**4,468,800**	**4,358,600**	**1,510,500**	**1,560,850**	**1,510,500**	**1,560,850**	**1,855,350**	**1,510,500**	**3,121,700**	**4,788,000**	**4,947,600**	**36,140,850**

Charter	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.6	0.6	0.6	
Aircraft Utilization (Hour)	12.4	11.2	12.4	9	9.3	9	9.3	9.3	9	12.4	18	18.6	139.9
Fare/Hour	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	35,000	
Load Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Route Revenue	**434,000**	**392,000**	**434,000**	**315,000**	**325,500**	**315,000**	**325,500**	**325,500**	**315,000**	**434,000**	**630,000**	**651,000**	**4,896,500**
Phuket-Surat	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**TOTAL**
Daily Flights	6	6	6	2	2	2	2	2	2	6	6	6	
Flight time (min)	45	45	45	45	45	45	45	45	45	45	45	45	
Aircraft Utilization (Hour)	139.50	126.00	139.50	45.00	46.50	45.00	46.50	46.50	45.00	139.50	135.00	139.50	1,094
Fare	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	
Load Factor	84%	84%	74%	53%	53%	53%	53%	63%	53%	53%	74%	84%	
Route Revenue	**3,562,272**	**3,562,272**	**3,138,192**	**749,208**	**749,208**	**749,208**	**749,208**	**890,568**	**749,208**	**2,247,624**	**3,138,192**	**3,562,272**	**23,847,432**

Phuket-Trang	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Daily Flights	4	4	4	4	4	4	4	4	4	4	4	4	
Flight time (min)	33	33	33	33	33	33	33	33	33	33	33	33	
Aircraft Utilization (Hour)	68.20	61.60	68.20	66.00	68.20	66.00	68.20	68.20	66.00	68.20	66.00	68.20	803
Fare	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Load Factor	74%	74%	53%	53%	53%	53%	53%	63%	53%	53%	74%	84%	
Route Revenue	**1,743,440**	**1,743,440**	**1,248,680**	**1,248,680**	**1,248,680**	**1,248,680**	**1,248,680**	**1,484,280**	**1,248,680**	**1,248,680**	**1,743,440**	**1,979,040**	**17,434,400**

Phuket-Hua Hin	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Daily Flights	4	4	4	2	2	2	2	2	2	4	4	4	
Flight time (min)	80	80	80	80	80	80	80	80	80	80	80	80	
Aircraft Utilization (Hour)	165.33	149.33	165.33	80.00	82.67	80.00	82.67	82.67	80.00	165.33	160.00	165.33	1,459
Fare	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	2,800	
Load Factor	84%	84%	84%	53%	53%	53%	53%	74%	53%	74%	84%	84%	
Route Revenue	**5,541,312**	**5,541,312**	**5,541,312**	**1,748,152**	**1,748,152**	**1,748,152**	**1,748,152**	**2,440,816**	**1,748,152**	**4,881,632**	**5,541,312**	**5,541,312**	**43,769,768**

APPENDIX C
GOVERNMENT REGULATIONS

Ministry of Transportation Thailand's Notification

Aviation Policy for the domestic private airline

The ministry of transportation has considered that for common good to the public who use the domestic air transportation and for support the growth of air transportation in the country, the ministry committee have agreed to deregulate the aviation policy by open the private sector to invest in the schedules airline business. The committee, now abort the existing notification about airline national airline monopolization. The new one has announced, and to set the rule and regulation for the domestic private airline as the following:

1.) The petitioner must qualify to register in airline business;

2.) The petitioner must offer one or more services of:

2.1 Feeder Service to the national airlines which are:

- The routes that the national airline pause to give the private sector to invest instead;
- The routes that the national airline have never operated before;
- The routes that the national airline have no direct flight.

2.2 The service on the route that the national airline have never operated.

2.3 The service on the route that the national airline have ever operated but pause now.

3.) The petitioner must utilize the aircraft that have:

3.1 Fixed wing
3.2 At least two engines

4.) The petitioner must submit to the department of aviation, the petition and the related document as they specified

Announcement on 3 December 1991
(General Suthep Teparak)

Deputy Minster of Transportation Ministry

Source: Department of Aviation Thailand

Petition for airline establisment

A. The petition for establish an airline propose to Department of aviation Thailand.

B. The petition must be including the original document and its two copies. The petition must have the information as the following:

1. General information

1.1 Name of the petitioner, type of petitioner (individual or juristic person, Company, etc.)
1.2 Name, address and Nationality of the petitioner.
1.3 Location base and branches.
1.4 Financial status of the petitioner.
1.5 The finding represented she/he nationality.
1.6 Other information about branches.

2. Implementation Plan.

It is necessary to propose the implementation plan about:

2.1 Purpose of the airline (Passenger, mail, freight, etc.)
2.2 Flight Schedules, frequency.
2.3 Personnel(Flight crew, and ground officers)
2.4 Fleet Planning.
2.5 Airport and ground facilities.

3. The Economic Information

3.1 The details represented the requirement from the public and the feasibility study on the intend route of flights, the benefits of the services requested, the marketing and economic feasibility.
3.2 Costs and Income estimated in the first 5 years of the project.
3.3 Fare rate and the details.

4. The aircraft information:

4.1 Number of operating aircraft, type, amount of engine, power plant, maximum weight for take off, capacity, cruising speed and the flight level.
4.2 Information about navigation aids and telecommunications.
4.3 Finding of the belonging or leasing aircraft.
4.4 Aircraft maintenance Plan.
4.5 Evidences on the aircraft insurance.

Source: Department of Aviation Thailand.

Biography

Miss Pantip Jiramahakun was born on June 30, 1972 in Bangkok, Thailand. She graduated the Bachelor's Degree in Physics from Chulalongkorn University in academic years 1994. Then she has worked for AEROTHAI for 5 years as an assistant air traffic controller in the air traffic control department. In the late 1999, she has attended to study in Engineering Management AT THE Regional Center for Manufacturing System Engineering. This center is operated by the coorporation between Chulalongkorn University and University of Warwick, which has main base at Coventry, England. In the 2001 academic year, she graduated Master's degree in Engu\ineering from Chulalongkorn university and Master's degree in Science from university of Warwick.