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Trends in Air Transportation between the USA and the Asia/ Pacific Region with Particular Consideration of United Airlines' Acquisition of the Pan Am Pacific Division

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TRENDS IN AIR TRANSPORTATION BETWEEN THE USA AND THE ASIA/PACIFIC REGION WITH PARTICULAR CONSIDERATION OF UNITED AIRLINES' ACQUISITION OF THE PAN AM PACIFIC DIVISION

by

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This thesis was prepared under the direction of the candidate's thesis committee chairman, Dr. Boris Trnavskis, Associate Professor in the Aviation Business Administration Department, and has been approved by the members of his thesis committee. It was submitted to the School of Graduate Studies and Research and was accepted in partial fulfillment of the requirements for the degree of Master of Business Administration in Aviation.

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ABSTRACT

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Title: Trends in air transportation between the USA and the Asia/Pacific region with particular consideration of United Airlines' acquisition of the Pan Am Pacific Division

Institution: Embry-Riddle Aeronautical University

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This study deals with the development of scheduled passenger traffic between the USA and selected countries in the ICAO Asia/Pacific region from 1977 to 1987. Among the significant trends are the growth in scheduled passenger traffic volume and the increase in both the percentage share of US citizens and foreign flag carriers. This study focuses on United Airlines' acquisition of Pan Am's Pacific Division in 1985. An analysis of selected Pan Am transpacific services in terms of market share and quality of service before 1985 shows a general declining trend. The main reasons for this development include Pan Am's poor financial performance and increased competition due to multiple carrier designation. United Airlines' impact on US - Pacific markets was modest. In 1987, United Airlines improved its market share positions over those of Pan Am in 1985 by 2 to 8 percent. This suggests that United Airlines was unable to turn its domestic feeder system and US market dominating APOLLO CRS into a competitive advantage.

To my parents

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

This thesis deals with the transportation of scheduled passengers from the USA to selected countries in the Asia/Pacific region. This topic is especially important because the Asia/Pacific region has developed into a significant market for aviation services in recent years and is expected to continue growing at rates exceeding those of other ICAO regions.

The objectives of this study are to identify overall market trends, to evaluate Pan Am's transpacific services, to compare the performance of United Airlines' replacement service with that of Pan Am, and to relate any significant changes to United Airlines' extensive domestic route network and well established APOLLO computer reservation system.

Chapter I introduces the Asia/Pacific region and elaborates on social, political, economic, and demographic factors exercising an influence on air transportation.

Chapter II analyzes overall market trends in scheduled passenger traffic between the USA and selected Pacific rim countries from 1977 to 1987. The chapter presents an evaluation of the magnitude and direction of changes in the scheduled passenger volumes and in the scheduled passenger market shares of US/non-US citizens

and US/non-US flag carriers.

An analysis of the development in the number of international transpacific carriers and Asia/Pacific destinations served from US gateways is also presented in this chapter. Finally, supply and demand trends at US gateways, measured in terms of passenger seats available and revenue passengers carried, are investigated.

Chapter III focuses on Pan Am's scheduled passenger services in nine selected transpacific markets. Pan Am's performance in these markets is analyzed in terms of passenger market share and quality of air service. The quality of air service is measured using a quality service index (QSI) which was originally developed by the Civil Aeronautics Board (CAB) in the late 1960s.

Pan Am's services are compared with those of United Airlines which acquired Pan Am's Pacific Division in 1985. The researcher determined how market shares and the QSI on the transpacific routes have changed since United Airlines replaced Pan Am. The impact of United Airlines' large domestic network and feeder potential, and the well established APOLLO computer reservation system on market share changes is discussed.

A correlation analysis was used to test whether there is a significant linear relation between QSI and market share.

Finally, Chapter IV summarizes the findings and conclusions, and gives recommendations for future studies dealing with topics discussed in this thesis.

CHAPTER I

BACKGROUND TO AIR TRANSPORT IN ASIA AND THE PACIFIC

Definition of the Region and its Relative Position in the World

According to the definition of the International Civil Aviation Organization (ICAO), the Asia/Pacific region comprises 34 countries (of which 30 are ICAO contracting

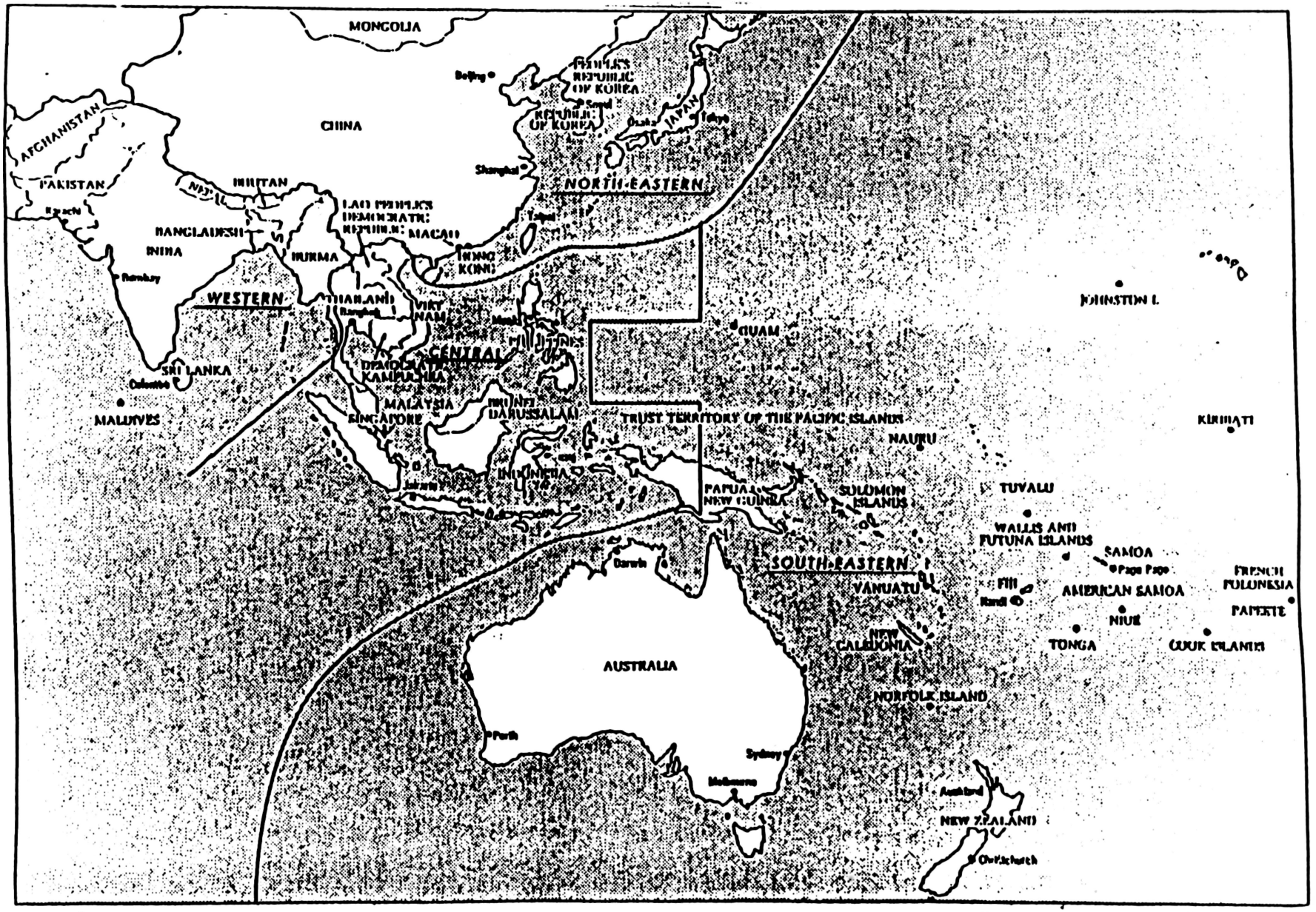
TABLE 1.1

NATIONS AND TERRITORIES IN THE ICAO ASIA/PACIFIC REGION

WESTERN	CENTRAL	NORTHEASTERN	SOUTHEASTERN
Nations:	Nations:	Nations:	Nations:
Afghanistan	Brunei	China	Australia
Bangladesh	Kampuchea	North Korea	Fiji
Bhutan	Indonesia	Japan	Nauru
Burma	Lao PDR	Mongolia	New Zealand
India	Malaysia	South Korea	Papua New Guinea
Maldives	Philippines		Samoa
Nepal	Singapore	Territories:	Solomon Is.
Pakistan	Thailand		Tonga
Sri Lanka	Viet Nam	Hong Kong	Tuvalu
		Macau	Vanuatu
			Territories:
			American Samoa
			Cook Is.
			Guam
			New Caledonia
			Niue
			Norfolk Is.
			Tahiti
			Trust Territory of Pacific Is.
			Wallis&Futuna

SOURCE: ICAO, International Air Passenger And Freight Transport: Asia and Pacific (Montreal: ICAO, September 1986), 119.

Figure 1.1



The ICAO Asia-Pacific Region

Source:

Nawal K. Taneja,
The International Airline Industry, (Lexington, Massachusetts: Lexington Books, 1988), 124.

states) and 9 territories of Australia, France, New Zealand, Portugal, Great Britain and the United States.

The position of the Asia/Pacific region in terms of demographic, geographic, and economic factors relative to other ICAO regions in the world (Africa, Europe, Latin America and the Caribbean, Middle East, and America) becomes evident in Table 1.2 and 1.3. In 1983, the Asia/ Pacific region had 2.58 billion inhabitants which was equivalent to 55 percent of the world population. The gross national product (GNP) amounted to US $2.285 trillion which was 22 percent of the world's total. In terms of world trade by value, the region accounted for US $707.116 billion or 38.2 percent. Comparing traffic information of 1977/78 versus 1983/84, the region's share has grown in the areas of total passenger and total air freight transportation which increased from 13.4 percent and 15.6 percent to 16.4 percent and 23.2 percent, respectively. Figure 1.2 which shows a ten-year development of total ton-kilometers performed not only confirms this growth trend but also clearly indicates that the Asia/Pacific region outperforms other ICAO regions. The following section lists the factors primarily responsible for this exceptional development.

TABLE 1.2

A COMPARISON OF DEMOGRAPHIC, GEOGRAPHIC, AND ECONOMIC INDICATORS OF ALL ICAO REGIONS FOR 1976 and 1977

Indicator	Units	Asia and Pacific	Africa	Europe 2/	Latin America and Caribbean	Middle East	North America	World	Asia and Pacific Share (%)
Population (1977)	millions	2 258	426	780	342	81	240	4 127	54.7
Area	mill. km^2	30.0	30.3	30.3	20.6	5.4	19.3	135.9	22.1
Population Density	pop./km.^{2}	75	14	26	17	15	12	30	-
Gross National Product 3/ (1977)	thous. mill. US$	1.356	211	3 365	437	200	2 091	7 858	19.8
GNP Per Capita	US$	588	495	4 314	1 278	2 469	8 713	1 904	-
International Trade (1977)									
- Imports	mill. US$	161 847	53 873	609 924	65 784	58 439	199 986	1 149 853	14.1
- Exports	mill. US$	170 090	54 438	562 741	58 971	107 248	162 529	1 116 017	15.2
Air Freight - Total (1978)	mill. TKP	4 057	638	9 659	1 447	1 112	9 017	25 930	15.6
- International	mill. TKP	3 548	573	7 281	1 111	1 085	3 331	16 929	21.0
- Domestic	mill. TKP	509	65	2 378	336	27	5 686	9 001	5.7
Air Passengers - Total (1978)	mill. Pax-Km	124 952	24 100	321 238	46 470	25 538	393 171	935 469	13.4
- International	mill. Pax-Km	77 654	18 779	163 296	25 822	20 630	78 240	384 421	20.2
- Domestic	mill. Pax-km	47 298	5 321	157 942	20 648	4 908	314 931	551 048	8.6

Notes: 1/ Regional groupings are those adopted by ICAO for statistical purpose.
2/ Includes USSR.
3/ GNP data for Iran, Uganda and Viet Nam are for 1976.

Sources: - International Bank for Reconstruction and Development, *World Bank Atlas*, 1979. (Population and GNP)
- United Nations, *Monthly Bulletin of Statistics*, April 1980. (International Trade)
- ICAO, *Civil Aviation Statistics of the World*, 1978, Doc. 9180/4. (Air Freight and Air Passenger)

SOURCE: ICAO, International Air Passenger And Freight Transport: Asia and Pacific (Montreal: ICAO, September 1977), 6.

TABLE 1.3

A COMPARISON OF DEMOGRAPHIC, GEOGRAPHIC, AND ECONOMIC INDICATORS OF ALL ICAO REGIONS FOR 1983 AND 1984

Indicator		Units	Asia and Pacific	Africa	Europe[2]	Latin America and Caribbean	Middle East	North America	World	Asia and Pacific Share (%)
Population	(1983)	Millions	2 579	524	809	368	102	259	4 641	55.5
Area		Mill. sq. km.	30.0	30.3	30.3	20.6	5.4	19.3	135.9	22.1
Population density		Pop. sq. km.	86	17	27	18	19	13	34	-
Gross national product		Thous. mill. U.S.$	2 285[3]	374[4]	3 227[5]	715[6]	248[7]	3 593	10 442	21.9
GNP per capita		U.S.$	925	754	7 438	1 912	5 911	13 873	-	-
International trade	(1983)									
— Imports		Mill. U.S.$	351 628[8]	88 462	916 223	86 243	113 428	331 211	1 887 189	18.6
— Exports		Mill. U.S.$	355 488[8]	70 563	895 150	106 411	121 274	274 051	1 812 930	19.6
Air freight — total	(1984)	Mill. TKP	9 152	1 153	14 013	2 008	2 074	11 079	39 479	23.2
		TKP/capita	3.5	2.2	17.3	5.5	20.3	42.8	8.5	-
— International		Mill. TKP	8 227	1 057	11 242	1 467	1 991	4 921	28 905	28.5
		TKP/capita	3.2	2.0	13.9	4.0	19.5	19.0	6.2	-
— Domestic		Mill. TKP	925	96	2 771	541	83	6 158	10 574.3	8.7
		TKP/capita	0.4	0.2	3.4	1.5	0.8	23.8	2.3	-
Air Passengers — total	(1984)	Mill. pax-km	207 932	35 961	407 711	64 003	41 222	513 700	1 270 529	16.4
		Pax-km/capita	81	69	504	174	404	1 983	274	-
— International		Mill. pax-km	141 606	27 610	199 944	34 406	32 562	118 064	554 192	25.6
		Pax-km/capita	55	53	247	93	319	456	119	-
— Domestic		Mill. pax-km	66 326	8 351	207 767	29 597	8 660	395 636	716 337	9.3
		Pax-km/capita	26	16	257	80	85	1 528	154	-

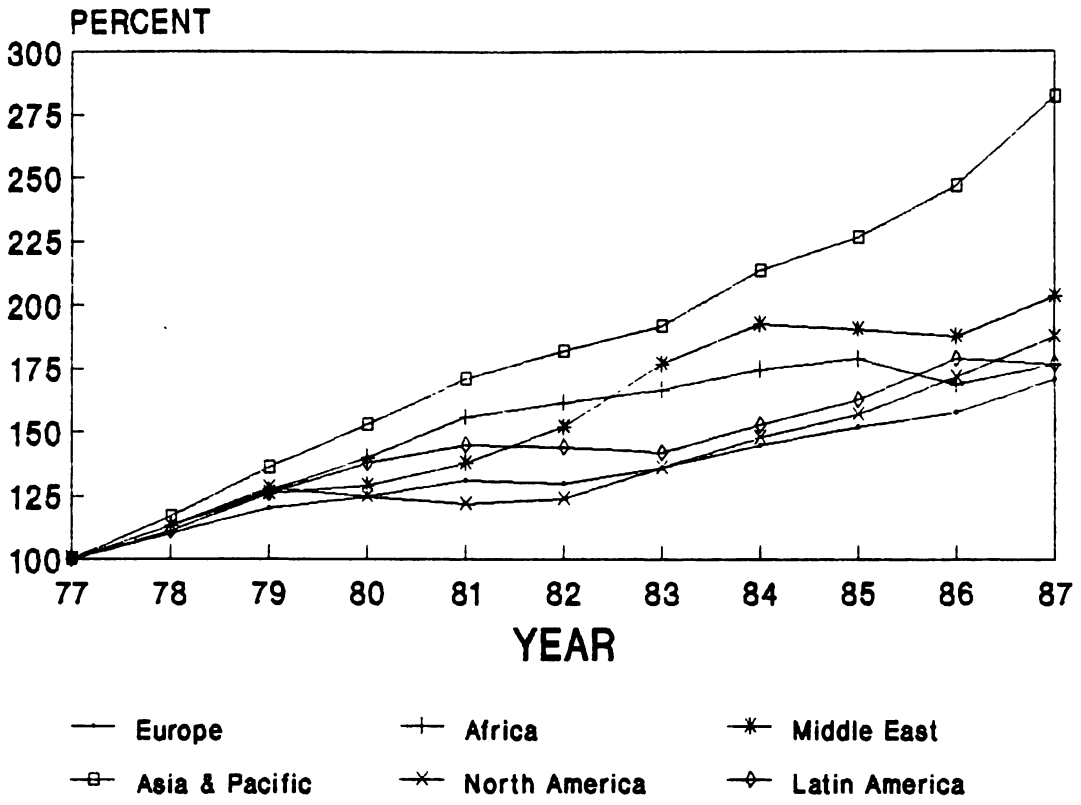
1. Regional groupings are those adopted by ICAO for statistical purposes.
2. Includes USSR.
3. GNP and GNP per capita excludes data for Afghanistan, Bhutan, Cook Islands, Democratic Kampuchea, Democratic People's Republic of Korea, Lao People's Democratic Republic, Maldives, Mongolia, Niue, Tokelau, Tuvalu, Vanuatu, Viet Nam, Wallis and Futuna, and Western Samoa.
4. GNP and GNP per capita excludes data for Angola, Chad, Comoros, Djibouti, Equatorial Guinea and Mozambique.
5. GNP and GNP per capita excludes data for Albania, Bulgaria, Czechoslovakia, German Democratic Republic, Poland, Romania and Union of Soviet Socialist Republics.
6. GNP and GNP per capita excludes data for Cuba, French Guiana, Guadeloupe and Netherlands Antilles.
7. GNP and GNP per capita excludes data for the Islamic Republic of Iran, Iraq and Lebanon.
8. Figures differ from those in Appendix 2 due to inclusion here of estimates for non-reporting States.

Sources.— International Bank for Reconstruction and Development, *World Bank Atlas*, (Population and GNP).
United Nations, *Monthly Bulletin of Statistics*, December 1985, (International Trade).
ICAO, *Civil Aviation Statistics of the World*, (Air Freight and Air Passenger).

SOURCE: ICAO, International Air Passenger And Freight Transport: Asia and Pacific (Montreal: ICAO, September 1986), 7.

FIGURE 1.2

THE DEVELOPMENT OF TON KILOMETERS PERFORMED (PERCENTAGE) IN EACH ICAO REGION FROM 1977 TO 1987 (1977 = 100)



SOURCE: Calculations based on ICAO, Civil Aviation Statistics of the World (Montreal: ICAO, August 1977-1987), 5.

Factors Influencing the Development of Air Transportation

Geographic Factors

The foremost characteristic of the Asia/Pacific region is its great geographic size. It covers over half of the circumference of the globe. The distance from Kabul in the north-west to Papeete in the south-east, for example, is about 16,000 kilometers, while the distance between Tokyo in the north and Sydney in the south is 7,800 kilometers. Distances to other regions such as Europe and North America are even greater and in the case of Singapore-London and Singapore-San Francisco could be as long as 10,900 km and 16,000 km, respectively.

Five states in the region (Afghanistan, Bhutan, Lao's People's Republic, Mongolia, and Nepal) are landlocked which implies several disadvantages when it comes to routing surface shipments through other countries. Major disadvantages include increased shipping cost due to transit charges, absence of control over transport tariffs, and priority of movement could be subordinated to the needs of the transit country.

Almost half of the states and almost all of the territories are islands or archipelago states. The islands, in particular, are relatively isolated and

receive only infrequent ocean shipping service (1).

Demographic Factors

Between 1977 and 1983, the region's population grew from 2.258 billion at an average annual rate of 2.1 percent to 2.579 billion inhabitants. In the same time frame, the world population grew at a lower rate of 1.8 percent from 4.127 billion to 4.641 billion. The population in the year 2000 is expected to be approximately 3.340 billion - still an impressive 55 percent of the world's population.

The volume and pattern of migration to, from, and within the region is also a major contributor to air transport in the region. In particular, emigration from Europe to Australia and New Zealand after 1945 established the basis for visiting friends and relatives (VFR) travel. However, this pattern is changing due to the fact that more immigrants are now coming from countries in the region. In the case of Australia, for example, between 30 and 40 percent of the immigrants are from Vietnam, Philippines, Malaysia, and India. New Zealand also faces a growing number of immigrants from South Pacific islands such as the Cook Islands, Samoa, and Fiji.

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(1) ICAO, International Air Passenger and Freight Transport: Asia and Pacific (Montreal: ICAO, September 1986), 3.

The existence of ethnic communities both inside and outside the region further contribute to VFR traffic. In particular, Chinese communities in Thailand, Singapore, and Indonesia, as well as various Asian communities in Western Europe and the USA are referred to in this respect.

Finally, the phenomenon of "guest workers" from Asian countries working in the Gulf States in the construction industry provides another basis for air transport. The increase in oil prices in 1974 and 1979 enabled OPEC countries to engage in large-scale construction projects creating a strong demand for construction and service personnel which no longer could be met from within the Middle East and North Africa. Therefore, an increasing number of people were hired from Pakistan, India, South Korea, Thailand and the Philippines. Estimates for the years 1982-1983 for some of the countries involved include 2 million workers from Pakistan engaged in the Middle East, 800,000 from India, 400,000 from the Philippines, and 280,000 from Thailand (2).

Economic Factors

As shown in Table 1.2, the region's 1983 GNP per capita of US $925 was the second lowest in the world and far below that of Europe ($7,438) and that of North America ($13,873). The low GNP, however, does not

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(2) Ibid., 5.

reveal the extreme contrasts one finds in the region. On the one hand, there are countries and territories whose GNP per capita is between $7,000 - $16,000 while other countries range between $150 - $160, the lowest in the world. Table 1.4 displays several of the countries involved. The differences in GNP per capita not only indicate the various developmental stages of the countries' and territories' economies but also the potential of people in these very countries to travel by air.

TABLE 1.4

COMPARISON OF GNP PER CAPITA OF SELECTED COUNTRIES IN THE ASIA/PACIFIC REGION IN 1987

COUNTRY	GNP PER CAPITA (US $)
1. Australia	7,687
2. Bhutan	150
3. Hong Kong	8,070
4. Japan	15,760
5. Lao PDR	170
6. Nepal	160
7. New Zealand	7,750

SOURCE: World Bank, World Bank Development Report 1989 (New York: Oxford University Press, 1989), 164-165.

In terms of level of development, the Asia/Pacific region's countries and territories could be grouped as follows:

(i) the three developed market economies of Australia, Japan, and New Zealand;

(ii) the semi-industrialized market economies of Brunei, Hong Kong, Indonesia, Malaysia, Philippines, South Korea, Singapore, and Thailand;

(iii) the developing economies of the Western subregion, socialist countries, and island states in the Southeastern subregion;

(iv) China which, although considered a developing country, has such aggregate resources in human resources and economic terms that it engages in industrial and commercial activities comparable to that of developed countries.

The wealth of the region is concentrated in only four countries: Japan, China, India, and Australia, which together account for 82 percent of the region's GNP. Japan alone represented over 50 percent of the total in 1983 (3). However, despite the economic dominance of countries like Japan and Australia, the high growth economies are found in developing countries as shown in Table 1.5.

Of importance to air transportation was the emphasis, by an increasing number of these countries, on export-oriented strategies. Air transportation has enabled developing countries to gain a large share of the international markets for goods such as consumer electronics, semiconductor devices, textiles and clothing, and electrical equipment. A list of these items exported by the region to the USA in 1984 is shown in Table 1.6.

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(3)Ibid., 6.

TABLE 1.5

GROWTH OF PRODUCTION OF SELECTED COUNTRIES IN THE ASIA/PACIFIC REGION

AVERAGE ANNUAL GROWTH RATE (PERCENT) OF GROSS DOMESTIC PRODUCT

COUNTRY	1965-80	1980-87
1. Australia	4.2	3.2
2. Japan	6.3	3.8
3. Hong Kong	8.6	5.8
4. Malaysia	7.4	4.5
5. Thailand	7.2	5.6
6. Singapore	10.1	5.4

SOURCE: World Bank Development Report 1989, 166-167.

These countries' economies seem to be more recession-resistant than those of other regions partially because demand in North America and Europe for goods produced in the Asia/Pacific region grew even during the early 1980s (4).

(4)Ibid., 6.

TABLE 1.6

GOODS SHIPPED BY AIR FROM THE ASIA/PACIFIC REGION TO THE USA IN 1983

COMMODITY DESCRIPTION	Value (000$)	Percent of total exports shipped by air
Integrated circuits & transistors	6,555,687	96
Textiles & garments	2,676,043	26
Data processing & office equipment & parts	1,717,677	60
Telecommunications equipment	1,507,566	30
Pearls, diamonds $ precious & semi-precious stones	969,096	91
Electrical equipment & parts	728,958	39
Electrical machinery & apparatus	721,518	40
Clocks & watches	689,629	72
Artswork & jewelry	566,702	79
Special transactions	516,696	57
Photographic apparatus & equipment	438,170	59
Toys	241,801	12
Electric instruments, non-medical	199,769	57
Optical goods	193,546	59
Fabrics	170,170	15
Aircraft, spacecraft & associated equipment	103,773	89
Footwear	99,539	4
Leather goods	96,282	49
Organic chemicals & related products	77,417	15
Fish (incl. shellfish)	52,369	7
Carpets	41,195	52
Pumps for liquids & parts	31,870	74
Medical instruments & appliances	19,030	90
Luggage	12,290	12
Medicinal & pharmaceutical products	9,941	95
Total exports by air	18,436,734	20

SOURCE: ICAO, International Air Passenger and Freight Transport: Asia and Pacific (Montreal: ICAO, September 1986), 48.

CHAPTER II

AIR TRANSPORTATION TRENDS BETWEEN THE USA AND THE ASIA/PACIFIC REGION

Method

The researcher applied a historical research method to analyze air transportation trends between the USA and the Asia/Pacific region. By applying this method, it is possible to gain a historical perspective of developments in trans-pacific air transportation. The trend analysis is based on a period of ten years from 1977 to 1987. This time frame was chosen because the researcher wants (a) to analyze various level of service trends in a market place while it was served by Pan Am and (b) to trace the changes that took place when United Airlines replaced Pan Am in 1986. Time series and trend analysis data allow the researcher to quantitatively evaluate those changes. Also, two important events affecting air transportation across the Pacific fall into this period: the International Air Transportation Competition Act (IATCA) of 1979 by the USA and the second oil crisis of 1979 resulting in a worldwide recession in the early 1980s.

The transpacific analysis is restricted to international

scheduled passenger traffic. Due to the different data sources used, international scheduled passenger traffic is measured in terms of origin/destination traffic and revenue passenger traffic carried between selected US origin and Asia/Pacific destination points.

An analysis of air cargo is beyond the scope of this thesis. Also, in 1984, international charter passenger traffic made up only 1 percent of the region's international passenger traffic and was, therefore, excluded from the analysis.

Due to the volume of the data, the trend analysis will be one-directional. This means that only international scheduled traffic originating in the USA and ending in the Asia/Pacific region is evaluated. Generally, passengers return on the same carrier to their point of origin because of the fare economics associated with staying on the same carrier. Therefore, the characteristics of the USA - Asia/Pacific traffic should also apply to the reverse direction.

The Western ICAO subregion is excluded from this study since there was no significant direct scheduled service between this part of the Asia/Pacific region and the USA across the Pacific from 1977 to 1987 (carriers offering service to the Western subregion from the USA did and do so by flying across the North Atlantic).

In the remaining three subregions, the countries listed in Table 2.1 are included in the analysis. The

researcher chose these countries according to their political and economic importance to the Asia/Pacific region and the USA. In order to account for the widely dispersed island nations in the Southeastern subregion, whose economies rely for the most part on the tourist industry, the islands of Fiji and Tahiti were chosen.

TABLE 2.1

DESTINATION COUNTRIES OF STUDY IN THE ASIA/PACIFIC REGION

NORTHEASTERN	CENTRAL	SOUTHEASTERN
Hong Kong *	Indonesia	Australia
Japan	Malaysia	Fiji
PR China	Philippines	New Zealand
South Korea	Singapore	Papua New Guinea
Taiwan	Thailand	Tahiti *

* These destinations points are not sovereign states but territories

The origin points of US - Asia/Pacific scheduled passenger service were taken from the ICAO publication "Traffic by Flight Stage" and are listed in Table 2.2.

TABLE 2.2

US ORIGIN POINTS OF STUDY

Anchorage
Chicago
Honolulu
Los Angeles
Minneapolis
New York
Portland
San Francisco
Seattle

SOURCE: ICAO, Traffic by Flight Stage (Montreal:ICAO, 1987).

Data Sources

Bilateral Agreements between the USA and Asia/Pacific Countries

Bilateral agreements form the legal framework of the aviation services offered between two countries. Generally, they consist of three parts which are the bilateral, the annex to the bilateral, and one or more memoranda of understanding (MOU). While the bilateral contains regulations regarding tariffs and capacity, the annex specifies the routes to be operated by the designated airline of each state. MOU are often confidential and amplify particular aspects of the basic air services agreement (1).
The applicable bilateral agreements are an important data source for this thesis because they include rules and regulations regarding service and tariffs which can strongly influence trends in air transportation - in this context between the USA and selected Asia/Pacific rim countries.

An analysis of all the bilaterals was not necessary due to a summary transpacific study published by Boberg and Collison in 1989 (2). This thesis will rely on the authors' study which examined the bilaterals and their amendments with respect to the following service provisions: capacity, frequency, number of carriers, and routes/points of service.

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(1)Rigas Doganis,Flying Off Course(London: George Allen & Unwin, 1985), 26-27.
(2)Kevin B. Boberg and Frederick M. Collison,"International Trends in the Pacific Basin", Transportation Journal, Vol.28, No.3 (Spring 1989), 26.

It also analyzed bilateral provisions regarding the approval procedure for fares/rates, notification, and protest periods, the role of the International Air Transportation Association (IATA), and the resolution of disputes to evaluate fares.

ICAO's Traffic by Flight Stage

The publication "Traffic by Flight Stage" (3) is published by ICAO and is used in this study as a source of both supply and demand data. Supply is measured in terms of passenger seats available on each flight stage while demand is measured in terms of revenue passengers carried on each flight stage. It must be noted that traffic by flight stage is not the same as origin and destination traffic for which passengers are counted at points where they clear customs and immigration. According to ICAO, a flight stage is the operation of an aircraft from take-off to its next landing. "Traffic by Flight Stage" merely shows the number of passenger seats available and the actual number of revenue passengers carried on a flight stage between some US origin and Asia/Pacific destination point which are connected by a nonstop air service.

Until 1981, "Traffic by Flight Stage" was published by ICAO four times a year for the months of March, June, September, and December. From 1982, "Traffic by Flight

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(3)ICAO, Traffic by Flight Stage(Montreal: ICAO, 1977-1987).

Stage" was published only once a year and contained annual traffic data.

In order to estimate the annual volume of passenger seats available and revenue passengers carried from 1977 to 1981, the researcher used the month of June to represent the peak summer traffic and December to represent the low winter traffic in the northern hemisphere. Data for both months are added, divided by two and multiplied by twelve to estimate the annual volume of passenger seats available and number of revenue passengers carried. The researcher believes this procedure gives a satisfactory indication of the development of the travel volume on selected trans-pacific flight stages on an annual basis.

The use of "Traffic by Flight Stage" as a demand and supply data source has some inherent limitations. Carriers offering services on certain flight stages are not obliged to report their traffic data to ICAO. Mostly for competitive reasons, they do not disclose the number of seats available or the number of revenue passengers carried on selected flight stages. Therefore, the actual traffic volume is greater than recorded. The discrepancy between actual and recorded traffic varies from flight stage to flight stage since it is at the carrier's discretion to decide each year for what flight stage to release data.

Another source of discrepancy stems from the fact that some carriers did not report their traffic data to ICAO on

time. It was not possible to estimate the magnitude of the discrepancy in a way that is relatively consistent over the time period studied. However, the researcher believes that the flight stage traffic data published were sufficient to indicate supply and demand trends in the market place.

European airlines carrying traffic between Europe and the Asia/Pacific region transiting Anchorage are excluded from this study since these carriers have no fifth freedom right (4) between Anchorage and points in the Asia/Pacific region.

US International Air Travel Statistics

US International Air Travel Statistics are published annually by the US Department of Transportation (DOT) and compiled by the US Immigration and Naturalization Service (INS). This publication was used as a demand data source to evaluate the development of international scheduled origin/destination passenger traffic in terms of US/non-US citizenship and usage of US/non-US flag carrier.

The INS figures are a by-product of an administrative process and need some adjustments since they include Europe -Asia/Pacific passengers transiting Anchorage, Los Angeles, and Honolulu, and traffic in and out Guam. Although

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(4)The fifth freedom right allows an airline to carry traffic between two points outside its country of registry as long as the flight originates or terminates in the country of registry.

the magnitude of this traffic is not known, its volume is insignificant since Europe-Asia/Pacific passengers usually travel on airlines flying through the Middle East region or using the transsiberian route (5). The INS data also include non-revenue traffic such as airline employees and passengers on frequent flyer awards. The magnitude of this traffic usually is about 5 percent (6).

Reasons for Using DOT and ICAO Traffic Data

There were several reasons for using two passenger traffic data sources. First, the previous discussion of the data sources reveals that neither of the two sources singly included all data needed for this study of demand and supply trends in international transpacific scheduled passenger traffic. The data sources complemented each other.

Second, the use of two data sets allowed the researcher to cross-check the number of passengers carried between some US origin and Asia/Pacific destination points. This was possible in situations when markets were served on a nonstop basis since origin and destination passengers could be considered as flight stage passengers. These two sets of data therefore supported each other.

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(5)Marjorie Saccoccio, Reports Officer at the DOT's Center for Transportation, interview by researcher, Telephone interview, Cambridge, Massachusetts, 15 May 1990.
(6)"The Magical Allure of the Orient", Avmark Aviaation Economist(November 1986), 15.

Air Transportation Trend Analysis

Bilateral Agreements

With the enactment of IATCA in 1979, the USA has specified goals it would pursue in future bilateral negotiations. These goals, which parallel those stated in the domestic Deregulation Act of 1978, include among other things:

"(1) freedom of air carriers and foreign air carriers to offer fares and rates which correspond with consumer demand;

(2) the maximum degree of multiple and permissive international authority for US carriers so that they will be able to respond quickly to shifts in market demands;

(3) the elimination of operational and marketing restrictions to the greatest extent possible;

(4) an increase in the number of nonstop US gateway cities;

(5) the elimination of discrimination and unfair competitive practices faced by the US airlines in foreign transportation, including excessive landing and user fees, unreasonable ground handling requirements, undue restrictions on operations, prohibitions against change of gauge, and similar restrictive practices" (7).

An analysis of several Asia/Pacific countries' bilateral agreements by Boberg and Collison (8) shows that the US did not enjoy uniform success when it came to "exporting" its economic deregulation in the form of "Open Skies" policies to the rest of the world.

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(7)US Congress, House, The International Air Transportation Competition Act of 1979, Pub. L., 17 December 1979, 15 Feb. 1980, 94 Stat. 42.
(8)Boberg and Collison, "International Trends in the Pacific Basin".

They differentiated countries in the Asia/Pacific region by qualitatively evaluating the degree of restrictiveness in terms of service and fares. The results of this are exhibited in Table 2.3. The presumption of economic deregulation is that competition will provide a more efficient and effective air transportation.

As a result, according to Boberg and Collison, one should expect service and traffic growth to be greater than the market average for Singapore, Korea, and Taiwan. Countries with more restrictive agreements such as Japan should experience inhibited growth, despite the fact that it may increase in absolute terms.

However, this discussion neglects the fact that traffic growth between two countries depends on a variety of factors. The degree of restrictiveness in bilateral agreements is only one factor. Despite a restrictive bilateral with Japan, for example, the growth of air traffic still might be very high due to Japan's large and powerful economy which maintains substantial trade links to the USA.

The following sections will discuss whether or not the IATCA had an effect on transpacific passenger service.

TABLE 2.3

ESTIMATES OF DEGREE OF RESTRICTIVENESS IN US BILATERAL AGREEMENTS IN ASIA/PACIFIC *

	Degree of Restrictiveness		
Regulation	Liberal	Moderate	Restrictive
Service	Korea Singapore Taiwan **	Australia Fiji Indonesia Malaysia New Zealand Philippines Tahiti	Hong Kong Japan PR China
Fares	Korea Singapore Taiwan **	Fiji Hong Kong Indonesia Malaysia New Zealand PR China Tahiti	Australia Japan

* The analysis is based on published bilateral agreements and amendments.

** Estimate according to Boberg and Collison.

SOURCE: Kevin B. Boberg and Frederick M. Collison, International Trends in the Pacific Basin, Transportation Journal, Vol.28, No.3 (Spring 1989), 26.

Transpacific Passsenger Volume and Structure

Table 2.4 reveals that all three ICAO Asia/Pacific subregions have three trends in common. First, despite differences in volumes and growth rates, the total number of passengers grew in all three subregions. The USA-Northeastern region was the largest passenger market and grew between 1979 and 1987 by an average annual rate of 13.9 percent. The USA - Central region was the smallest market and showed an average annual growth rate of 8.7 percent. Finally, the USA - Southeastern region had an average annual growth rate of 10.4 percent.

A second trend common to all the regions is that the share of US citizens measured as a percentage of the total number of passengers traveled to Asia/Pacific destinations also increased. It is interesting to note that the USA-Southeastern region as the second largest transpacific market showed the largest increase in the US citizen share which grew by 14 percentage points from 41 percent in 1979 to 55 percent in 1987. Second in US citizen share growth was the USA - Central region market which increased by 11 percentage points from 58 percent to 69 percent. The USA-Northeastern market as the largest transpacific markets exhibited the smallest increase in the US citizen share. It grew by 8 percentage points from 27 percent to 35 percent.

The third major trend is the continuous increase of the share of passengers traveling on non-US flag carriers.

TABLE 2.4

AIR PASSENGER TRAFFIC CARRIED BETWEEN THE USA AND ASIA/PACIFIC SUBREGIONS BY CITIZENSHIP AND FLAG CARRIER (1979, 1982, 1985, and 1987)

US - Northeastern Subregion

	1979		1982		1985		1987	
	Passenger	Percent	Passenger	Percent	Passenger	Percent	Passenger	Percent
US citizen	502,274	27%	683,782	30%	1,304,501	39%	1,377,599	35%
Non-US citizen	1,358,000	73%	1,595,490	70%	2,040,499	61%	2,550,399	65%
Total	1,860,274	100%	2,279,273	100%	3,345,000	100%	3,935,998	100%
US flag	837,124	45%	888,917	39%	1,471,835	44%	1,635,119	42%
Non-US flag	1,023,150	55%	1,390,356	61%	1,873,245	66%	2,282,879	58%

US - Central Subregion

	1979		1982		1985		1987	
	Passenger	Percent	Passenger	Percent	Passenger	Percent	Passenger	Percent
US citizen	85,978	58%	130,020	53%	147,867	61%	173,278	69%
Non-US citizen	62,261	42%	115,567	47%	93,387	39%	77,849	31%
Total	148,239	100%	245,887	100%	239,454	100%	251,127	100%
US flag	65,225	44%	78,683	32%	64,653	27%	52,737	21%
Non-US flag	83,014	56%	167,204	68%	174,081	73%	198,390	79%

US - Southeastern Subregion

	1979		1982		1985		1987	
	Passenger	Percent	Passenger	Percent	Passenger	Percent	Passenger	Percent
US citizen	102,499	41%	207,540	40%	266,160	46%	448,416	55%
Non-US citizen	262,621	59%	311,310	60%	312,450	54%	366,885	45%
Total	445,120	100%	518,850	100%	578,610	100%	815,301	100%
US flag	163,694	37%	155,655	30%	173,583	30%	293,509	36%
Non-US flag	200,426	63%	363,195	70%	405,027	70%	521,792	64%

SOURCE: Calculations based on US Department of Transportation, US International Air Travel Statistics (Cambridge, Massachusetts: 1979-1987).

The market with the largest increase is the USA-Central subregion where there was an impressive 23 percentage point increase from 56 percent in 1979 to 79 percent in 1987. The share of non-US flag carriers in the USA - Northeastern and USA - Southeastern markets was much less dramatic and grew by 3 percentage points and 1 percentage point, respectively.

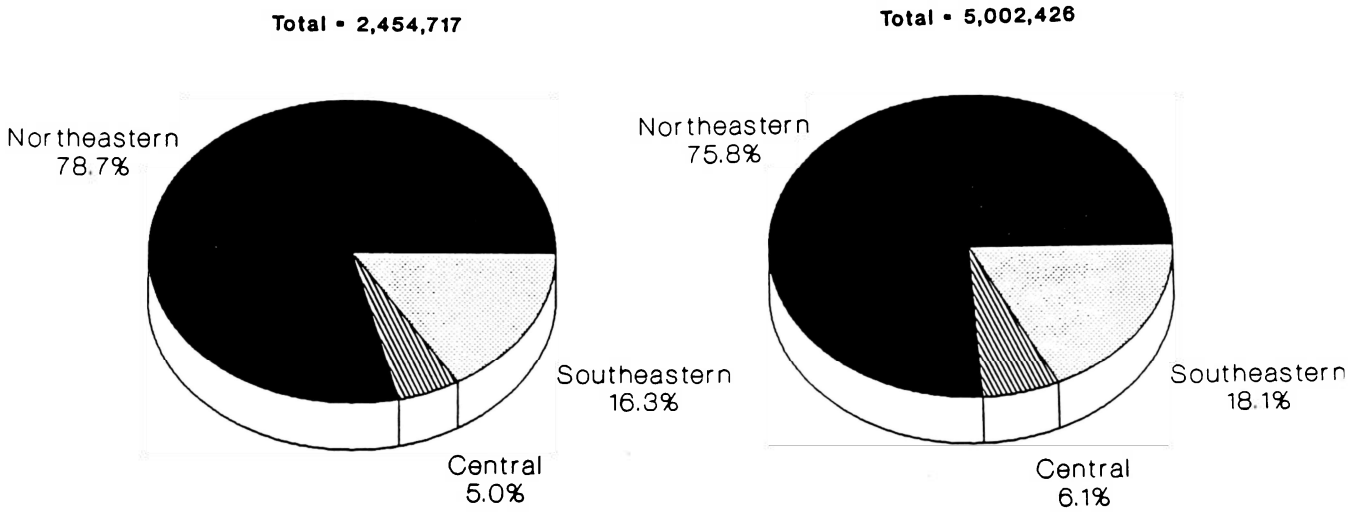
The brief discussion of developments in passenger volume, US citizen share, and non-US flag carrier share, reveals a rather diverse picture when all three transpacific markets are compared with each other. The following section tries to account for these trends in each of the transpacific markets.

US - Northeastern Passenger Traffic

In 1979, a total of 2,454,717 passengers traveled from the USA to all three ICAO subregions. With 1,860,274 or 79 percent of this total, the Northeastern subregion accounted for the largest share (Figure 2.1).

FIGURE 2.1

PERCENTAGE SHARE OF INDIVIDUAL SUBREGIONS OF TOTAL NUMBER OF PASSENGERS CARRIED BETWEEN THE USA AND ALL THREE SUBREGIONS FOR 1979 AND 1987

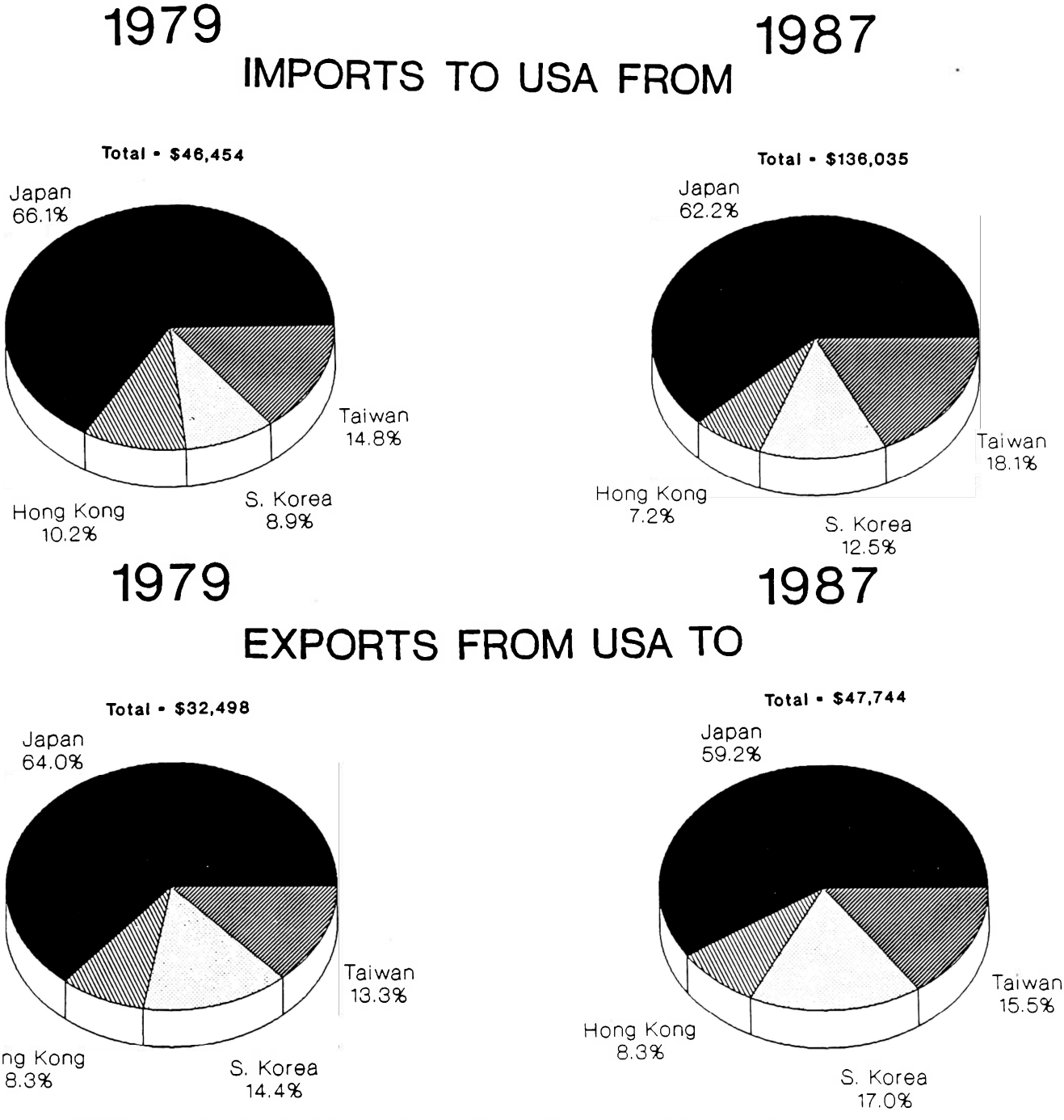


SOURCE: Calculations based on US Department of Transportation, US International Air Travel Statistics (Cambridge, Massachusetts: 1979-1987).

Since demand for air transportation is derived from factors such as economic activities, it can be assumed that the growing trade volume between the USA and countries in

FIGURE 2.2

US TRADE WITH COUNTRIES OF THE NORTHEASTERN SUBREGION IN 1979 AND 1987 (In Millions of Dollars)



SOURCE: Calculations based on Department of Commerce, Bureau of the Census, Statistical Abstract of the USA, 1984 and 1988 (Washington, D.C.: Government Printing Office 1984 and 1988), 788-791.

the Northeastern subregion certainly contributed to an increase in passenger traffic, in particular business related traffic. The major market is Japan to which approximately 81 percent of the 1,860,274 passengers traveled (9). This is a reflection of the economic ties between the USA and Japan which was by far the largest trading partner of the USA in the Northeastern subregion (Figure 2.2). However, the trade with other countries in the Northeastern subregion gained importance. The trade volume with Taiwan and South Korea, for example, grew from 1979 to 1987 by some 250 percent and 205 percent, respectively. The trade volume with Japan in the same time frame increased by around 150 percent (Table 2.5).

Since the growth in trade volume between the USA and Taiwan and South Korea outstripped that between the USA and Japan, one might also expect a higher growth rate in the passenger volume to these very countries. Indeed, as indicated in Table 2.5, US-Japan passenger growth lags behind that of other US-Northeastern subregion markets. Consequently, Japan's share of the 3,935,998 US-Northeastern subregion passenger traffic declined to 74 percent in 1987 (10).

It should be pointed out that the growth in passenger

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(9)Calculations based on Department of Transportation, US International Air Travel Statistics(Cambridge, Massachusetts 1977 and 1987).
(10)Calculations based on US International Air Travel Statistics.

TABLE 2.5

PERCENTAGE GROWTH OF TRADE AND PASSENGER VOLUME BETWEEN THE USA AND COUNTRIES IN THE NORTH-EASTERN SUBREGION FROM 1979 TO 1987 (1979 = 100)

Country		1979	1982	1985	1987
Japan	Trade($)	100	134	209	257
	Passenger	100	118	149	194
Taiwan	Trade($)	100	145	229	349
	Passenger	100	145	220	282
S.Korea	Trade($)	100	136	193	305
	Passenger	100	157	248	341
Hongk.	Trade($)	100	256	358	443
	Passenger	100	112	187	212

SOURCE: Calculations based on Department of Commerce, Bureau of the Census, Statistical Abstract of the USA 1985 and 1988 (Washington D.C.:Government Printing 1985 and 1988), 788-791, and US Department of Transportation, US Air Travel Statistics(Cambridge, Massachusetts: 1979-1987).

volume to markets other than Japan was also the result of the fact that an increasing number of airlines bypass Tokyo and directly serve markets in the Northeastern and Central subregion. Flights bypassing Tokyo were the result of frequency limitations imposed on foreign airlines by Japanese authorities.

Although this helped relieve congestion at Tokyo's Narita Airport,it also suggested to passengers that flights to points in the Northeastern/Central subregion could be easier than the Tokyo connection. First, passengers avoid Narita which acquired some of the negative image experienced by large US hubs (11). Crowded terminals, lost baggages, and delayed flights are probably the key words in this respect.

Second, passengers realize that total travel time can be shorter which is particularly important to business travelers who want to arrive at their destination in the shortest possible time. However, numerous airline industry officials think that Japan, despite the introduction of new long-range aircraft such as the B747-400 and the MD 11, continues to serve as a main hub in Asia, making therefore the issue of fifth freedom traffic through Japan still important (12). A major reason could be the fact that yields per kilometer on US - Japan routes are higher than on other US-Northeastern/Central routes as exemplified by Figure 2.3.

A considerable proportion of passenger traffic moving from the USA to the Northeastern subregion consists of visiting friends and relatives traffic and certainly contributed to the continuously high share of non-US citizens in this market. It can make up more than 50 percent of the passenger volume and is therefore "large

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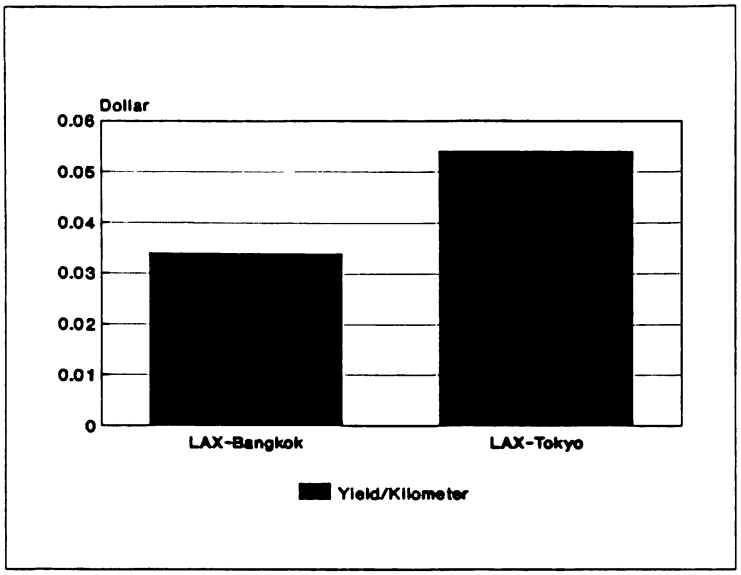
(11)"The Magical Allure of the Orient", 17.
(12)Mark W. Lyon, "Pacific Rim Carriers Meet The Threat Of Protectionism",Airline Executive, December 1989, 27.

FIGURE 2.3

TRANSPACIFIC YIELDS BY SELECTED MARKETS



SOURCE: Mark W. Lyon, "Pacific Rim Carriers Meet Threat Of Protectionism",Airline Executive, December 1989, 28.

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enough to make a difference to every airline in the market", according to Frederick Dow, vice president International Marketing at Northwest Airlines (13).

The large Asian communities in the USA, in particular in New York, Los Angeles, and San Francisco are the reason for the visiting friends and relatives traffic. There are around 800,000 Koreans in New York and Los Angeles and a sizable Chinese community in San Francisco and Los Angeles which generate visiting friends and relatives traffic to South Korea and mainland China, Hong Kong, and Taiwan, respectively (14).

The share of US citizens was 27 percent in 1979 and

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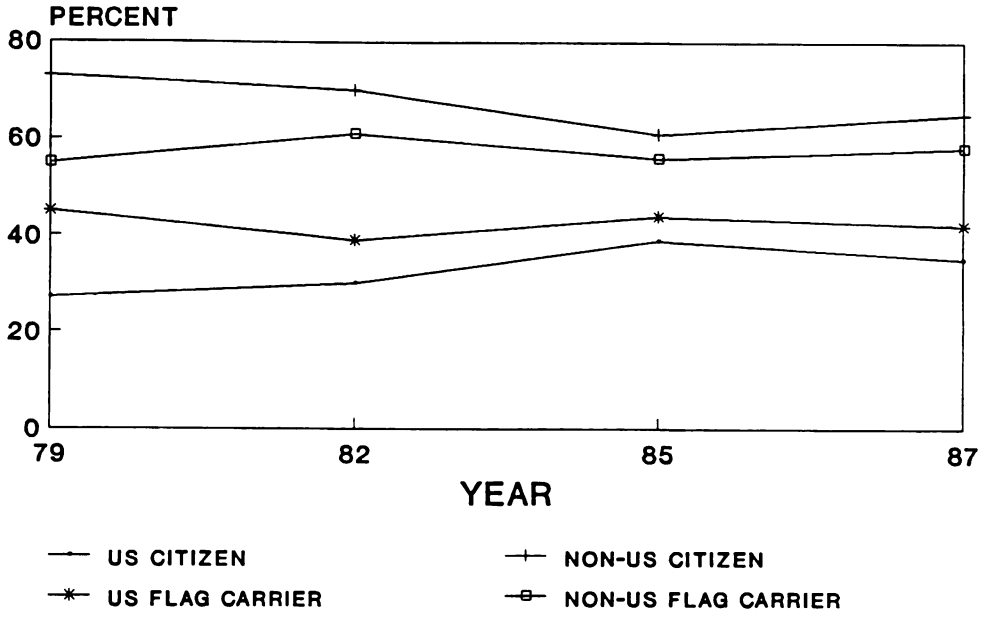
(13)Ibid., 19.
(14)Perry Flint,"Korean Air:Riding The Tiger", Air Transport World, October 1987, 26.

FIGURE 2.4

DEVELOPMENT OF US/NON-US CITIZEN AND US/NON-US FLAG CARRIER TRAFFIC AS A PERCENTAGE OF TOTAL US-NORTHEASTERN TRAFFIC FOR THE YEARS 1979, 1982, 1985, AND 1987



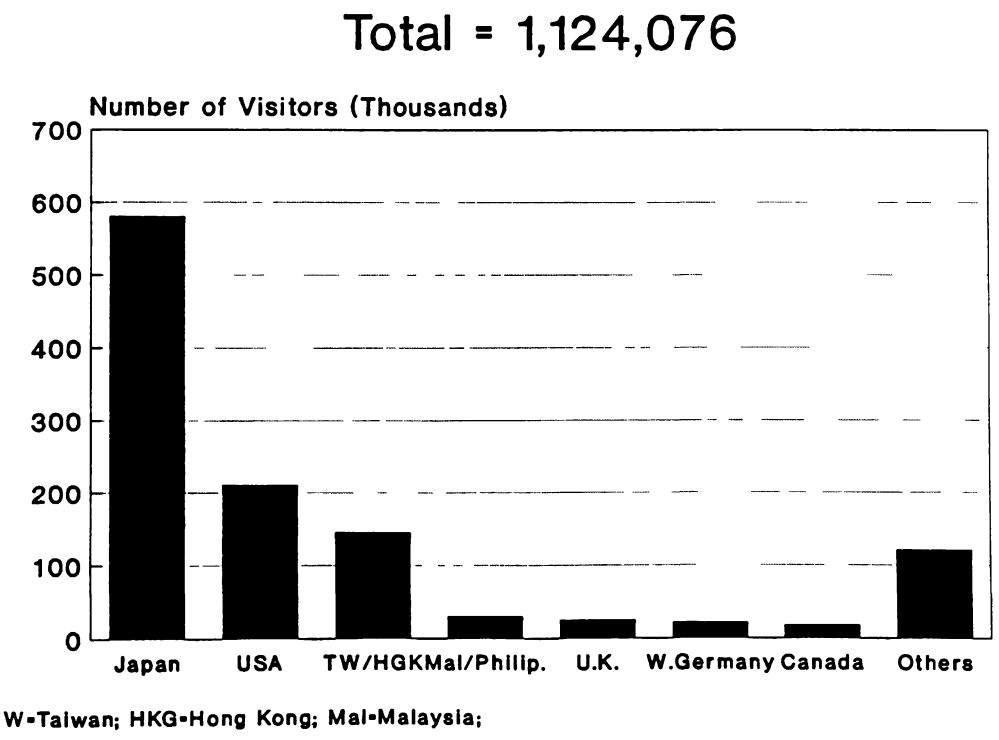
SOURCE: Calculations based on US International Air Travel Statistics, 1979-1987.

interest among US tourists to visit this part of the world.

Countries like Japan, however, benefited only to a limited extent from this growing tourist since its currency was in the past much stronger than the US dollar,therefore, not offering strong purchasing power to US tourists. In contrast, South Korea experienced a major surge of foreign visitors with the share of US visitors steadily increasing and being the second largest after the Japanese in 1984 as exhibited in Figure 2.5.

FIGURE 2.5

VISITOR ARRIVALS IN SOUTH KOREA BY MAJOR MARKETS IN 1984



SOURCE:"South Korea - A new market opportunity",Lloyd's Aviation Economist, April 1986, 17.

The fact that approximately 64 percent of the total of 1,124,076 visitors arriving in South Korea in 1984 were leisure travelers emphasizes the country's growing importance to US leisure travelers.

Besides South Korea, China also developed into a country of growing importance to US leisure travelers. In 1986, 1,264,482 tourists visited China. Of this total, US tourists constituted with 291,779 or 23 percent the second largest group after Japanese tourists. In 1987, the number of US visitors grew by 8 percent to 315,238 (15). With respect to the future development of the share of US citizens on routes to the Northeastern subregion, the researcher expects a decline due to an increase in the number of Asian travelers between the USA and the Northeastern subregion. This trend will be mainly the result of growing disposable incomes combined with a relaxation of overseas travel restrictions, especially in countries like South Korea and Taiwan.

The announcement by the Japanese government in 1986 to stimulate Japanese leisure and business travel spending and to increase the number of Japanese overseas travelers to 10 million by 1992 as a means of reducing the country's trade deficit will also contribute to a larger share of Asians on US - Northeastern routes (16).

The share of non-US flag carriers to destinations in the

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(15)"The Tianamen fall-out",Avmark Aviation Economist, September 1989, 14.
(16)Ian Rodger,"The Mighty Yen",Airline Business, May 1989, 35.

Northeastern subregion was 55 percent in 1979 and increased to 58 percent in 1987. There are several reasons which could be responsible for making the majority of passengers fly on non-US flag carriers. First, Asian carriers are known for their high level of service which is particularly attractive to the full fare business class and first class passenger. High quality of inflight meals, the provision of inflight amenities, and a low passenger flight attendant ratio are are just a few among multiple areas in which Asian airlines excel compared to their American competitors.

Second, Asians have a stronger sense of flag carrier loyalty. This loyalty is not only the result of peer and cultural pressures but also of culture and language differences. It should be kept in mind that in the case of Japan, for example, in 1987, only around 4.2 percent of the Japanese population ever traveled abroad. Although the percentage increased to 7.7 percent in 1989, it still pales in significance when compared to countries like Great Britain and West Germany where the percentage of the population which traveled abroad was 44.4 percent and 34.7 percent, respectively (17). Therefore, the relative inexperience in international travel and the lack of knowledge of the English language (or the lack of knowledge of the respective Asian language among cabin crew members) are also factors which favor the "home airline" when

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(17)Ibid., 54.

traveling abroad.

Additionally, surveys indicate that flag carrier loyalty in Japan seems to grow with age (around 70 percent of middle-aged Japanese travelers ,e.g., express a preference for Japan Airlines) which will have an even greater impact in the future when one considers that by 1995 approximately one third of the Japanese population will be 50 years old and older (18).

Third, the distribution channels through which airline tickets are sold in the Asia/Pacific region seem to favor Asian airlines. Around 90 percent of all bookings in Japan, for example, are made through travel agents (19). Adequate access to these travel agents is therefore crucial for any American carrier in order to attract a higher percentage of Asian travelers. Although both United Airlines and American Airlines were allowed to install their computer reservation systems (CRS) in Japan, their market penetration was limited due to the fact that the systems used the English language instead of traditional calligraphy or "kanji"(20).

Also, both systems are not permitted to issue Japan Airlines tickets. Considering the fact that around 60 percent of travelers between the USA and Japan originate in Japan and Japan Airlines carries on an average 40 percent of all traffic between the USA and Japan, this indicates the

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(18)Ibid., 55.
(19)Ibid., 55.
(20)Nabuko Hara, "Home first, the world later",Airline Business, November 1987, 41.

competitive disadvantage of American carriers. Other countries are even more restrictive when it comes to the installation of American CRSs. South Korea still resists the access of CRSs such as Apollo and Sabre to its country (21).

Another important reason why Asian and also American travel agents might favor non-US flag carriers in their bookings could be because these foreign carriers pay higher commissions. Although the official IATA rate is 8 percent, it is known that commissions, particularly in the price sensitive visiting friends and relatives market, can exceed 35 percent and may be as high as 65 percent in selected markets (22).

Fifth, frequent flyer programs are illegal in Japan and therefore do not offer American carriers the possibility, unlike the practice in the USA, to attract passengers because of discount or free travel based on the accumulation of mileage credits with a particular carrier (23).

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(21)Trevor French, "Seoul Searching", Airline Business, December 1989, 27.
(22)Mark Lyon,"Rapid Capacity Growth On Pacific Routes Could Reduce Yields",Airline Executive,January 1988, 7.
(23)Ibid., 8.

US - Central Passenger Traffic

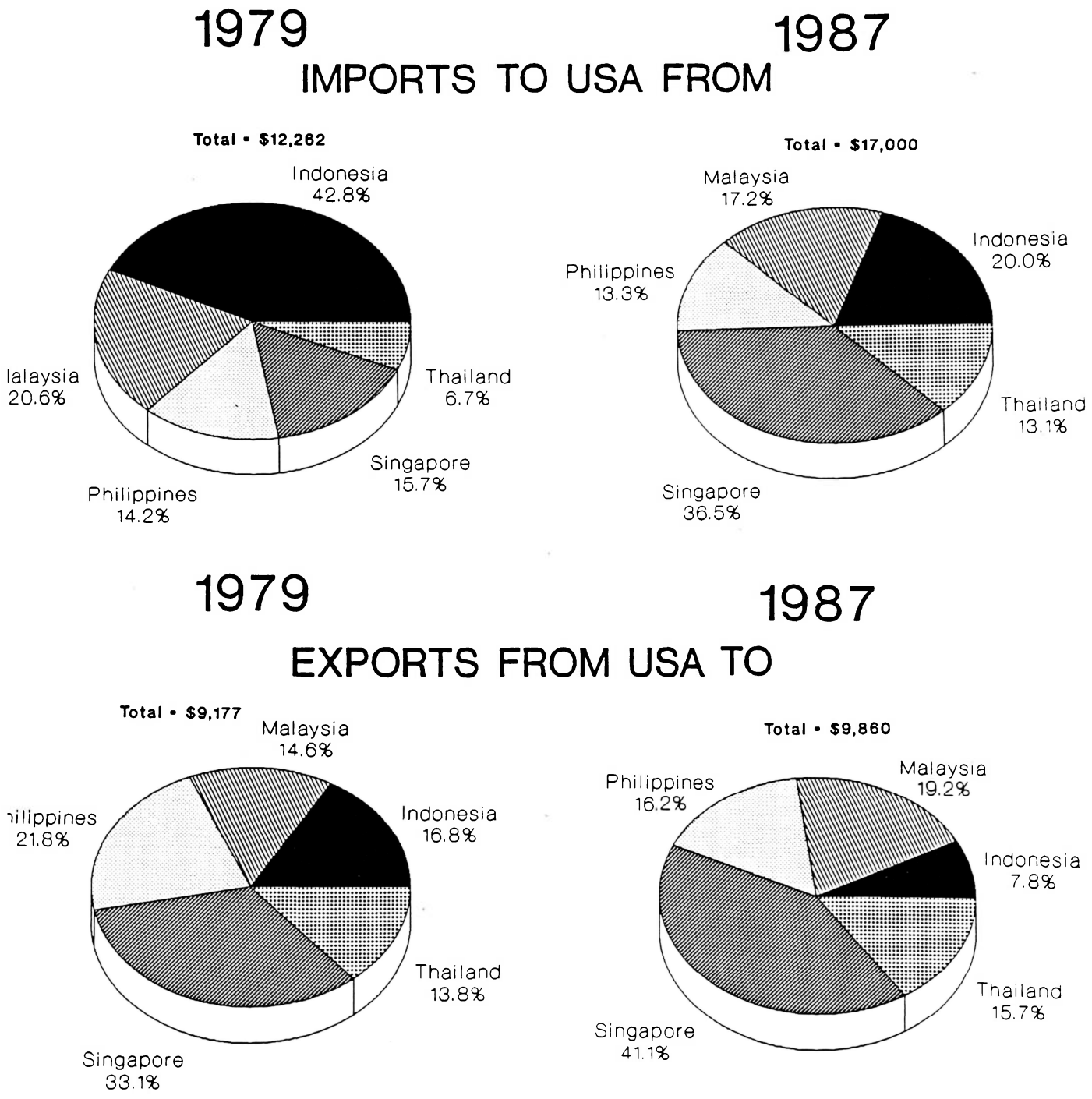
In 1979, a total of 149,323 passengers traveled to the Central subregion. By 1987, this volume grew to 251,127 passengers (Table 2.4). Figure 2.1 indicates that this subregion is the smallest transpacific market because it accounted only for 6.1 and 5 percent of the total transpacific passenger volume in 1979 and 1987, respectively.

The small size of the Central subregion is also a reflection of the much less significant economic ties the USA maintains with the countries of this subregion. Not only is the trade volume much smaller when compared with countries in other subregions, but also, except for Singapore which increased its exports to the USA by an annual average of 28 percent, it is even declining, notably in the case of Indonesia (Table 2.6). It can be assumed that business related traffic to this subregion is of much smaller volume than that to the Northeastern subregion.

There are several reasons why visiting friends and relatives traffic seems to account for a major proportion of the total traffic to this subregion. First, one should consider that the Philippines generated a large number of legally immigrated Asians to the USA. Between 1981 and 1985, 230,542 Filipinos immigrated to the USA, making it the second largest group after Mexicans with 335,563 for the

FIGURE 2.6

US TRADE WITH COUNTRIES OF THE CENTRAL REGION IN 1979 AND 1987 (In Millions of Dollars)



SOURCE: Calculations based on Statistical Abstract of the USA, 1984 and 1985.

TABLE 2.6

CHANGES OF EXPORTS AND IMPORTS BETWEEN THE USA AND COUNTRIES IN THE CENTRAL SUBREGION FROM 1979 TO 1987
(In Millions of Dollars, Except Percent)

	Exports			Imports		
Country	1979	1987	(% change)*	1979	1987	(% change)*
Indonesia	1,545	767	- 6.3	5,217	3,394	- 4.4
Malaysia	1,337	1,897	+ 5.3	2,517	2,921	+ 2.0
Philipp.	1,999	1,599	- 2.5	1,731	2,264	+ 3.8
Singapore	3,033	4,053	+ 4.2	1,921	6,201	+ 27.9
Thailand	1,263	1,544	+ 2.7	816	2,220	+ 21.2

* Annual average percentage change.

SOURCE: Calculations based on Statistical Abstract of the USA, 1984 and 1987.

same time frame (24). These immigrants certainly not only include Filipinos who married US citizens stationed on US bases but also Filipinos who got married to US citizens through "mail order bride" agencies in the USA. These people probably also infrequently return to the Philippines to see their relatives and friends.

An analysis of the passenger structure in the USA-Central subregion market reveals that the percentage share of US citizens traveling from the USA to the Central subregion in 1979 and 1987 was 58 percent and 69 percent, respectively. These percentage shares are the highest in all three subregions and might be attributed to three factors. First, business related traffic is dominated by US citizens. This also includes military related business when one takes into account that the USA has a substantial military presence in this subregion. Clark Air Force Base in the Philippines with around 12,000 people is one of the largest foreign US bases in the world (25).

Second, visiting friends and relatives traffic seems to be dominated by travelers who either acquired their US citizenship upon marrying a US citizen or by being a US resident for a certain length of time. Another source of visiting friends and relatives traffic could be Americans who visit their friends and relatives stationed on US bases.

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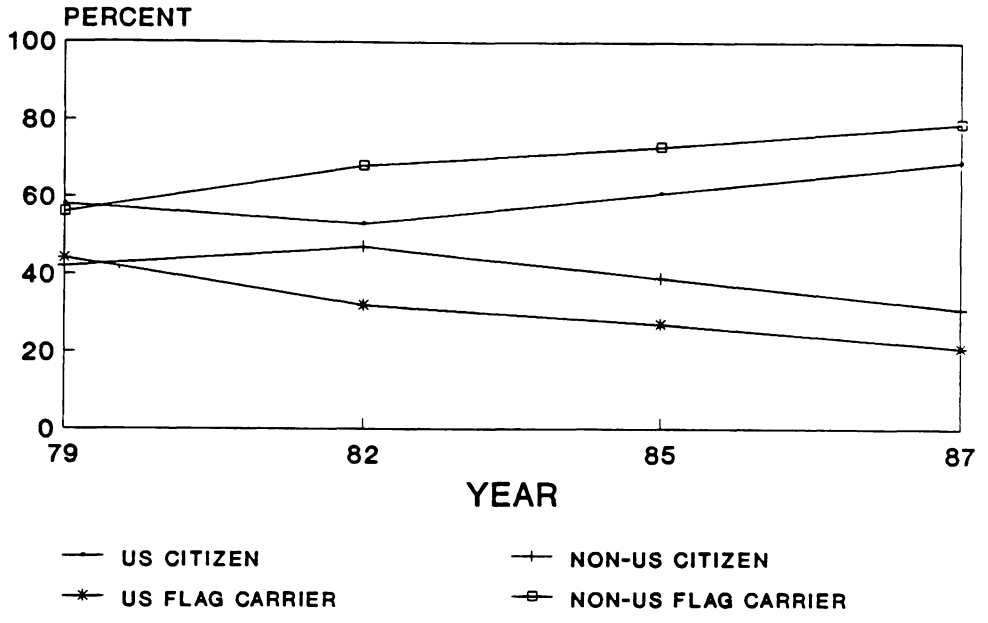
(24)USA By Number(Washington, D.C.:Zero Population Growth Inc., 1988), 39

(25)Dan Gragg,The Guide to Military Installations (Harrisburg, Pennsylvania: Gale Inc., 1983), 440-443.

FIGURE 2.7

DEVELOPMENT OF US/NON-US CITIZEN AND US/NON-US FLAG CARRIER TRAFFIC AS A PERCENTAGE OF TOTAL US-CENTRAL TRAFFIC FOR THE YEARS 1979, 1982, 1985, AND 1987



SOURCE: Calculations based on US International Air Travel Statistics, 1979-1987.

Third, traffic to this subregion consists of US military personnel traveling on charter flights. It is surprising to note that the high share of US citizens does not translate into a correspondingly high share for the US flag carriers. Actually, while non-US flag carriers already dominated the market in 1979 with 56 percent share, their share increased to 79 percent in 1987. This trend suggests two things. First, US business travelers largely prefer Asian airlines for their trip to the Central subregion. This might be understandable when one takes into account that this region has high-quality service carriers such as Singapore Airlines, Thai International, and Malaysian. In particular Singapore Airlines, which started flying to the USA in 1979, made outstanding gains and captured 9 percent of the US citizen share to the North/Central Pacific region (26). It should be emphasized that Singapore Airlines would not have been able to build up its market share on transpacific routes if it had not enjoyed the maximum marketing and operational freedom which was guaranteed under the very liberal bilateral agreement signed between the USA and Singapore in 1979. Garuda of Indonesia most likely had minimal impact on the market since it did not start serving the USA until 1986. Philippine Airlines (PAL) as opposed to other carriers from the Central subregion did not acquire the reputation of a high quality airline.

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(26)"The Magical Allure of the Orient", 12.

Low staff morale, an obsolescent fleet, low on-time records, and poor reputation among worldwide customers (PAL at one time was synonymous with "Plane Always Late") were main reasons for the poor reputation which certainly helped carriers like Singapore Airlines to build up their market share (27).

Singapore Airlines, Thai International, and Malaysian are also known for their involvement in promoting tourism to the area. Nevertheless, one can assume that US tourism to the Central subregion is negligible primarily due to high cost and long distances. Other factors which contributed to the high share of non-US flag carriers were already mentioned in the discussion of the Northeastern subregion and certainly include the issues of travel agent commissions, CRSs, and flag carrier loyalty.

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(27)Dee Mosteller, "Philippine Airlines gains slow, steady turnaround,Air Transport World, March 1983, 61.

US - Southeastern Passenger Traffic

Traffic to the Southeastern subregion grew from 445,120 at an annual average rate of 10.4 percent to 815,301 in 1987. Largely responsible for this growth is most likely the increase of the US citizen share which was the largest of all three subregions. It increased by 14 percentage points to 55 percent in 1987. Since the trade volume remained almost stationary (Figure 2.8) one can assume that the surge in passenger volume is not primarily business or trade related.

The region's growing attractiveness among US tourists probably played a major role in the passenger increase. In particular Australia went through a boom of inbound tourism and was declared by the Organization of Economic Cooperation and Development (OECD) in 1986 and 1987 as the fastest growing tourist destination in the developed world (28). Figure 2.9 exhibits this exceptional development.

US travelers who are supposed to account for 18 percent of total arrivals by the year 2000 (29) gained interest in Australia for several reasons.

First, special events like the America's Cup and the World Trade Exposition in 1987, coupled with aggressive overseas promotion by Qantas and the Australian Tourist

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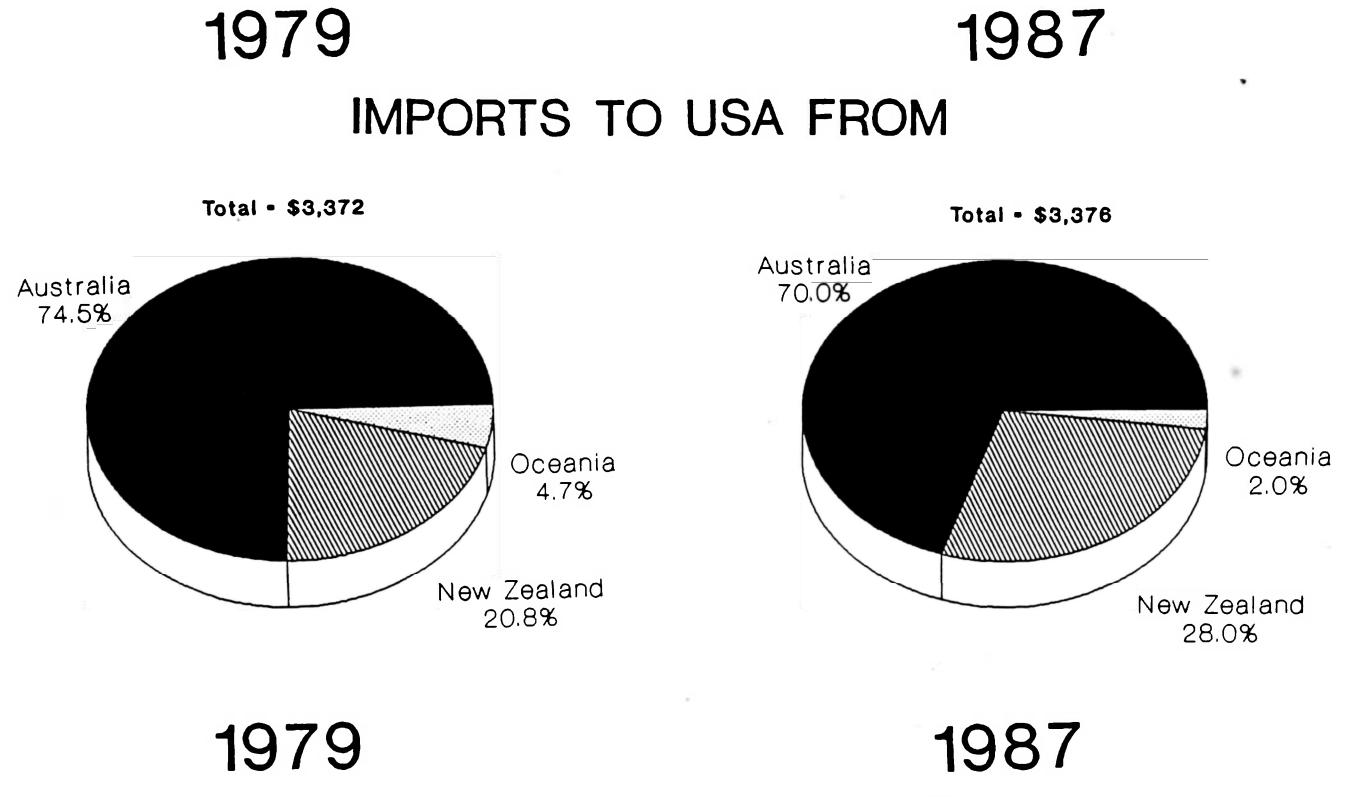
(28)Tony Harrington, "Global Hubbing", Airline Business, June 1989, 13.
(29)"Capitalizing on boom in tourism, Avmark Aviation Economist, September 1988, 14.

FIGURE 2.8

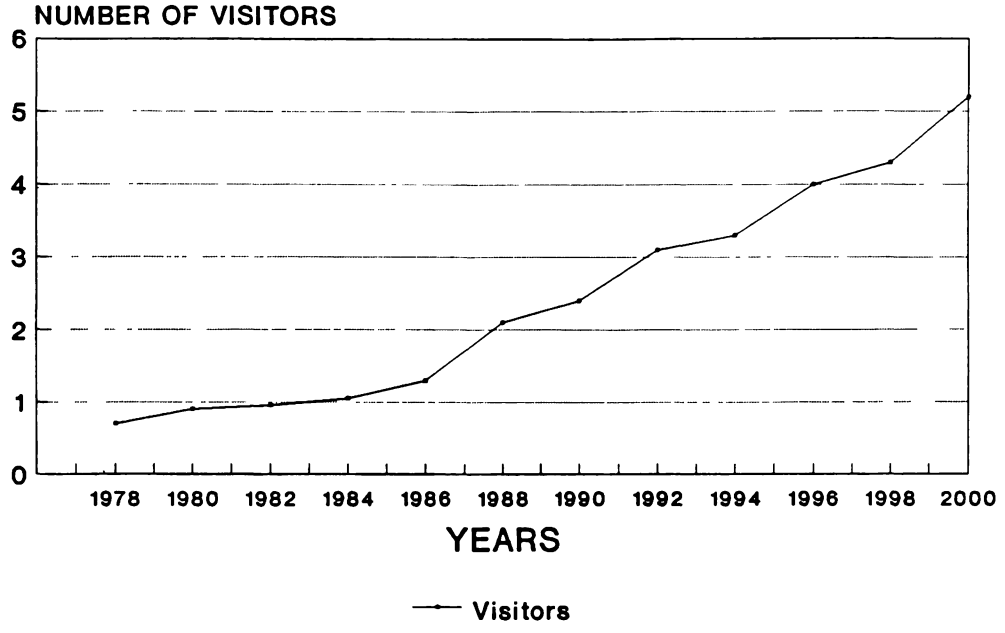
US TRADE WITH COUNTRIES OF THE SOUTHEASTERN SUBREGION IN 1979 AND 1987 (In Millions of Dollars)



SOURCE: Calculations based on Statistical Abstract of the USA, 1984 and 1987.

FIGURE 2.9

INTERNATIONAL ARRIVALS IN AUSTRALIA FROM 1978 TO 1987
(In Millions)



Estimates are from 1988 to 2000

SOURCE: Heini Nuutinen, "Capitalizing on boom in inbound tourism",Avmark Aviation Economist", September 1988, 14.

Office (ATC) increased the awareness of US leisure travelers for Australia as a tourist destination. However, industry officials agree that the movie 'Crocodile Dundee' starring Paul Hogan contributed more to the country's tourist image than any campaign. It is estimated the movie made around 1.5 million Americans ask about visiting Australia (30).

A second reason for the growing interest of US tourists in Australia was most likely the weak Australian dollar

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(30)Ibid., 14.

making Australia a value-for-money destination.

Finally, a third reason was that Western Europe in the wake of the Chernobyl accident and terrorist acts against US property and citizens in 1986 was not attractive to US tourists who therefore focused on countries across the Pacific (31).

New Zealand also proved to be a popular tourist attraction. Of the 1.2 million passengers the national airline Air New Zealand carried in 1987, 800,000 began their trip outside New Zealand. Also important is the fact that approximately 80 percent of Air New Zealand's passengers were leisure travelers (32). The USA generated the second largest number of inbound tourists, and although the volume was still fairly small (around 67,300 passengers in 1984), it grew at an annual rate of 20 percent (33). This trend most likely also added to the growing share of US citizens to the Southeastern subregion.

Tahiti and Fiji in the past benefited from the so-called "fuel stop tourism". This was the result of the limited range of aircraft which had to make a refueling stop on their flights between the USA and South Pacific destinations. The advent of new long range aircraft meant that airlines started overflying traditional stopover

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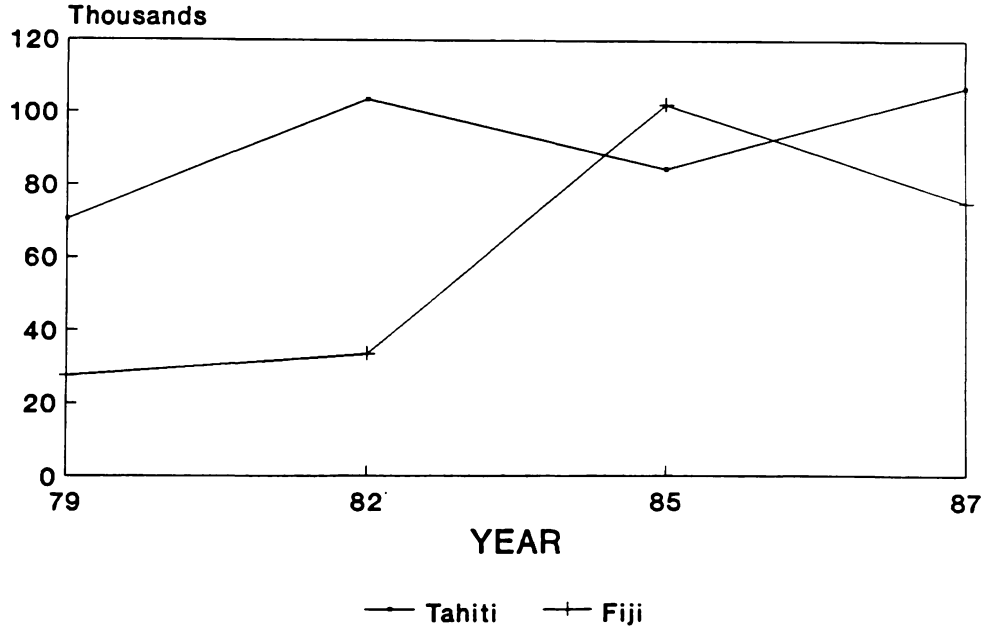
(31)David Learmount, "Qantas - safety & monopoly", Flight International, December 1987, 23.
(32)James P. Woolsey, Air New Zealand facing new challenges at home", Air Transport World, June 1987, 58.
(33)Ibid., 60.

points which in turn resulted in a decline of inbound tourism. Tahiti and Fiji were therefore required to promote themselves as source markets instead of fuel stops. Figure 2.10 shows that the number of people traveling to Fiji and Tahiti continuously increased from 1979 to 1987. It can be assumed that these islands' transition to source markets was therefore successful. The drop in visitors to Fiji from 102,178 in 1985 to 75,231 in 1987 is probably attributable to two military coups in 1986.

FIGURE 2.10

THE DEVELOPMENT OF US-FIJI/TAHITI TRAFFIC
FROM 1979 TO 1987

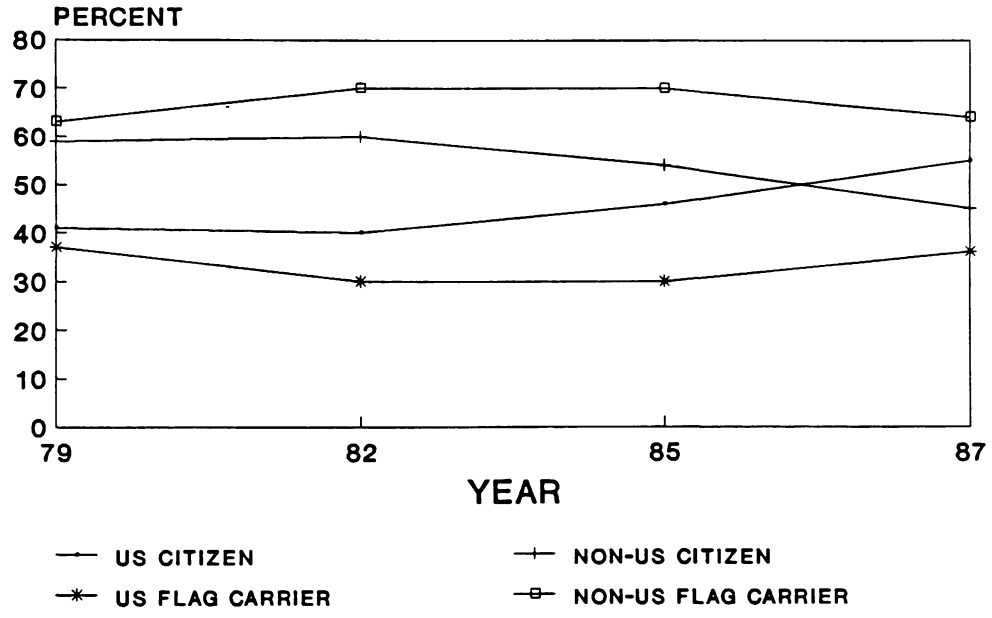


SOURCE: Calculations based on US International Air Travel Statistics, 1979-1987.

The share distribution of flag carriers was almost stationary and changed only by one percent. As Figure 2.11 shows, US flag carriers decreased their share from 37 percent in 1979 to 36 percent in 1987 although it was as low as 30 percent in both 1982 and 1985. Non-US flag carriers on the other hand had a continuously high share with 63 percent and 64 percent in 1979 and 1987, respectively. Considering the fact that the passenger volume almost doubled within 8 years, it can be assumed that the growth which as noted earlier primarily stems from the increase of the US citizen share was mainly carried by non US flag carriers such as Qantas, Air New Zealand, the French Airline Union de Transports Aeriens (UTA), and finally Canadian Pacific of Canada which has fifth freedom rights between Honolulu and various points in the South Pacific. Table 2.7 indicates that all non-US flag carriers had a share of the US citizen traffic of around 50 percent with the exception of Canadian Pacific whose total traffic in and out of Honolulu consisted of almost 75 percent US citizens. This development is even more surprising when one takes into account the addition of supposedly aggressive Continental Airlines to the South-eastern market in 1979.

FIGURE 2.11

DEVELOPMENT OF US/NON-US CITIZEN AND US/NON-US FLAG CARRIER TRAFFIC AS A PERCENTAGE OF TOTAL US-SOUTHEASTERN TRAFFIC FOR THE YEARS 1979, 1982, 1985, AND 1987



SOURCE: Calculations based on "US International Travel Statistics, 1977-1987.

TABLE 2.7

US-SOUTHEASTERN PASSENGER TRAFFIC BY CITIZENSHIP AND FLAG CARRIER IN 1985

(000s)

	US citizens		Non-US citizens		Total passengers		US citizens
Non-US flags	Number	Share	Number	Share	Number	Share	as % of total
Australia	208	33.8%	178	29.9%	386	31.8%	53.9%/
New Zealand	146	23.7%	162	27.2%	308	25.5%	47.4%
France	52	8.5%	50	8.4%	102	8.4%	51%
Canada	30	4.9%	11	1.9%	41	3.4%	73.2%
Sub-Total	436	70.9%	401	67.4%	837	69.2%	52%
US flag	179	29.1%	194	32.6%	373	30.8%	73.2%
Total	615	100%	595	100%	1210	100%	50.8%

SOURCE: "The Magical Allure of the Orient", 14.

The dominance of non US flag carriers in the US-Southeastern market suggests three things. First, non-US flag airlines offered to the price sensitive leisure travelers lower fares or a wider variety of special fares than their American counterparts. Qantas, for example, matched heavily discounted fares by US competitors and had US west coast - Australia fares for as low as $896 in 1987 (34). Earlier introduced promotional fares such as the so-called "Nipper Tripper" and "Qantas Circle Four" fares proved to be attractive to US travelers (35). Similarly

(34)Qantas,Qantas Annual Report 1987-1988, 8.
(35)Qantas,Qantas Annual Report 1983-1984, 8.

successful was an introductory fare of $499 from the USA to Cairns in North Queensland to stimulate tourism to the northern territories. Around 6,600 passengers traveled on this fare (36).

Air New Zealand's increased promotion of New Zealand in the USA, combined with a simplification and rationalization of fares between the USA and the South Pacific certainly added to the growing number of US citizens traveling on Air New Zealand (37).

A second reason for the dominance of non-US flag carriers could be the very fact that they are government owned airlines. Generally speaking, they are not only viewed as instruments of transportation, but also as instruments of economic policy, domestic and foreign political policy, and national defense (38).
These carriers, therefore, most often enjoy some kind of government protection against market forces, notably against privately owned, profit oriented carriers.

Australia demonstrated this kind of protection in fare related issues. In 1982, Pan Am and Continental offered credits to passengers who fly on their transpacific services to the USA. These credits once accumulated to a certain number of miles entitled the passenger to discount

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(36)Qantas, Qantas Annual Report 1984-1985, 9.
(37)Air New Zealand, Air New Zealand Annual Report 1984, 7.
(38)Betsy Gidwitz,The Politics in International Air Transport (Lexington, Massachusetts: D.C. Heath & Company,1980), 36.

benefits such as free tickets for travel in the USA and Mexico, free accommodation and car rental. The Australian Department of Aviation (DOA) became concerned with these travel packages because Qantas could not compete with them for a variety of reasons. The main one was the lack of access to interior points in the USA, therefore excluding Qantas from offering inexpensive air travel within the USA. After a close examination, the Australian DOA advised the US airlines to withdraw their travel schemes (39).

This point puts Qantas' aforementioned ability to attract passengers mainly through innovative low-priced air fares certainly into perspective. Nevertheless, it should be kept in mind that Qantas and Air New Zealand are the national airlines of geographically isolated countries with small populations of approximately 16 million and 3.3 million people, respectively. Both airlines substantially contribute to their countries' economies which increasingly rely on tourism. In the case of Australia which attempts to shift away from primary industries and mineral exports to become more dependent on service industries, tourism yields some 12 billion dollars a year, employs around 375,000 people, and contributes between 5 and 6 percent to the gross domestic product (40).

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(39)Praveen Singh, "Some aspects of Australia's air service agreements (Part three)",Air Law, Vol.10, No. 2, 1985, 72-74.
(40)Ibid., 79.

Similarly important are the national airlines' involvements in community affairs which is also responsible for their exceptionally high public profile. Qantas' wide support ranges from allocating money to programs that will help Australians to learn Asian language skills, funds for research in cancer treatment, diabetes, and drug rehabilitation (41).

Air New Zealand also is the sponsor of numerous sports and cultural activities but particularly prides itself on the so-called Christmas joy flights which take disabled children on rides in a B747 (42). This high degree of community involvement might also be responsible for some flag carrier loyalty among non-US citizens.

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(41)Qantas,Qantas Annual Report 1987-1988, 14-15.
(42)Air New Zealand,Air New Zealand Annual Report 1988, 16.

US Gateway Airports

Table 2.8 displays the origin and destination points of study analyzed in order to determine:

1. the number of transpacific carriers offering service from the gateways;
2. the number of Asia/Pacific destinations served by each gateway;
3. the supply of air service measured in terms of passenger seats available;
4. the demand for air service measured in terms of revenue passengers carried between gateways and destination points.

Table 2.8 differs from Table 2.1 because it includes all destination points which are listed in ICAO's "Traffic by Flight Stage" and connected to US gateways through a non/stop service. Table 2.1 on the other hand includes countries which are listed in the Department of Transportation's (DOT) "US International Air Travel Statistics" and receive direct service.

TABLE 2.8

US GATEWAY AND ASIA/PACIFIC DESTINATION POINTS OF STUDY

US Gateways	Asia /Pacific Destination Points		
	Central Region	Northeastern Region	Southeastern Region
Anchorage	Manila	Fukuoka, Japan	Auckland, New Zealand
Chicago		Hong Kong	Brisbane, Australia
Honolulu		Kaoshiung, Taiwan	Cairns, Australia
Los Angeles		Osaka, Japan	Guam
Minneapolis		Seoul, S.Korea	Christchurch, New Zealand
New York		Taipei, Taiwan	Majuro, Marshall Is.
Portland		Tokyo, Japan	Melbourne, Australia
San Francisco		Nagoya, Japan	Nandi, Fiji
Seattle		Okinawa, Japan	Noumea, New Caledonia
		Shanghai, PR China	Papeete, Tahiti
			Port Moresby, Papua New Guinea
			Rarotonga, Cook Is.
			Sydney, Australia
			Townsville, Australia

SOURCE: ICAO, Traffic by Flight Stage (Montreal:ICAO, July, 1977-1987).

The Number of International Scheduled Passenger Airlines

Table 2.9 shows that the number of international scheduled carriers flying between the USA and the Asia/Pacific region has doubled over the ten year period 1977 to 1987. While 11 airlines offered scheduled passenger services in 1977, this number increased to 22 by 1987. This development suggests several things. First, the air passenger transpacific market is a high growth market due to the increasing number of people traveling between the USA and the Asia/Pacific region. The increase in turn is caused by previously discussed factors such as fast growing economies in the Pacific rim, a rising popularity of Asia/Pacific countries as tourist destinations, the relaxation of overseas travel restrictions, and political stability.

Second, according to economic theory, suppliers of products and services are only attracted to competitive markets where they can realize a profit in the long run. The growing number of airlines seems to indicate that the transpacific passenger market is profitable or perceived to be profitable. However, this statement has to be put into perspective since several of the non-US transpacific carriers are partially or fully owned by their respective governments which support their national flag carriers to varying degrees. Therefore, profitability for these

TABLE 2.9

NUMBER OF INTERNATIONAL SCHEDULED AIRLINES ON SELECTED TRANSPACIFIC ROUTES FROM 1977 TO 1987

US Gateway\Year	77	78	79	80	81	82	83	84	85	86	87
Anchorage	2	1	5	4	4	4	4	4	6	5*	46
Chicago	1	1	1	1	1	1	1	1	1	2	3
Honolulu	10	9	13	12	12	13	14	14	14	14*	14
Los Angeles	5	4	5	7	10	10	10	10	11	13*	14
Minneapolis	0	0	0	0	0	0	1	1	1	1	1
New York	1	1	1	1	1	2	3	4	3	3*	3
Portland	0	0	0	0	0	0	1	1	2	1	2
San Francisco	5	3	3	3	4	4	6	5	5	5*	5
Seattle	1	1	3	3	4	4	6	7	7	5*	5
Total **	11	11	14	14	16	16	18	19	18	20	22

* The researcher considered United Airlines and Pan Am as one carrier since the former replaced the latter on all international transpacific routes in 1986. Correspondingly, the number of different carriers as listed in ICAO's publication was reduced by one carrier.

** The total is not the column total but the total number of different carriers offering scheduled passenger service across the Pacific.

SOURCE: ICAO, Traffic by Flight Stage (Montreal:ICAO, 1977-1987).

airlines not necessarily a main corporate objective. Up to what extent the market can absorb airlines operating at a profitable level remains to be seen. Critics are concerned about the recent capacity increases which are likely to outstrip demand creating pressure on yield. Peter Sutch, Chief Executive Officer of Cathay Pacific of Hong Kong, refers to the Pacific as the future "graveyard against which the North Atlantic will look like a picnic" (43).

Honolulu was served by the largest number of airlines putting it way ahead of other US airports and affirming its importance as the major gateway to countries in the Asia/ Pacific region. Since Honolulu does not have a large population base (an estimated 1,054,000 people lived in Hawaii in 1985)(44) and is not a center of major industrial or commercial activities, there must be other reasons for Honolulu's dominance as a US gateway.

One reason for Honolulu's dominance is the fact that most transpacific airlines use it as a technical stop. Responsible for this is the trade-off between payload and range. The range an airplane can fly is a function of among other factors, payload. Airplanes like the B707 and the DC-8 and early versions of aircraft such as the B747, DC 10, and L1011-500 which originate their flights in the

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(43)Norm Lynn, "US carriers too aggressive in Pacific Rim?",Airline Executive, August 1987, 22.
(44)Cities of the USA (the West)"(Detroit, Michigan: Gale Research Inc., 1988), 157.

continental USA with full payload of passengers and/or cargo cannot fly nonstop across the Pacific due to the fact that they do not have full fuel tanks. One exception is the B747 Special Performance (SP) which first flew in 1974. This airplane was designed for extremely long haul routes and could fly up to 7,658 miles with 276 passengers. If an airplane tried to take off with full fuel tanks and its maximum payload, the airplane would be structurally damaged because the sum of the two weights would exceed the maximum structural take-off weight. To fly between points in the continental USA and Asia/Pacific regions nonstop, an airplane would have to add fuel which in turn is only possible by sacrificing payload. Since sacrificing payload means losing revenues, airlines most often opt for making a fuel stop - in this case in Honolulu.

A second reason for Honolulu's dominance in terms of number of carriers might be its popularity as a tourist destination among Asian leisure travelers, particularly Japanese. This travel market certainly attracted additional airlines; among them fifth freedom airlines. Although the researcher did not analyze individual bilateral agreements, there are Asian airlines which are allowed to carry traffic between Honolulu and points in the Asia/Pacific region other than their country of registry. Examples are Singapore Airlines flying between the Honolulu and Hong Kong, and Korean

Airlines flying between Honolulu and Tokyo.

However, while Honolulu's status as the principal gateway was undisputed in 1977 when 10 airlines offered service to the Asia/Pacific region, it is obvious that other airports have been served by an increasing number of airlines thus underlining their growing importance as gateway airports. In particular Los Angeles, although only served by five airlines in 1977, gained rapidly over the years and showed 14 airlines in 1987 which was the same number of airlines serving Honolulu.

While Anchorage and Seattle increased their number of airlines on a much smaller scale, Chicago and New York displayed no change until 1985 and 1982, respectively. Minneapolis and Portland did not start until 1983 to serve as gateway airports - and then only with one carrier each. San Francisco is the only airport whose number of airlines in 1977, when compared with that in 1987, remained unchanged.

Number of Asia/Pacific Region Destinations Served from US Gateways

Table 2.10 reveals a growth trend in the number of Asia/Pacific destinations served from US gateways. Although the number of destinations served decreased at most airports in 1979 and 1980 - probably as a partial result of the 1979 oil crisis and the following worldwide recession - the total ten year period shows an increase from 10 destinations in 1977 to 16 destinations in 1987.

When Table 2.10 is compared with Table 2.9 which displays the number of international airlines serving US gateways, it is interesting to note that by 1987 the number of carriers outgrew the number of destinations served. Although IATCA specifically states the opening of new US gateways as a major goal to establish a higher degree of competition, the above-described trend suggests that the USA's attempt to liberalize international airline services through the enactment of IATCA in 1979 had more success in increasing multiple carrier designations than increasing the number of gateways. Correspondingly, transpacific airline service actually became more competitive through multiple carrier designation as evidenced in the case of Los Angeles International Airport (Table 2.11).

One reason why IATCA was not successful in increasing competition among airlines by opening a large number of new gateways could be the lack of US cities with characteristics which would make them gateways for direct

TABLE 2.10

NUMBER OF ASIA/PACIFIC DESTINATIONS SERVED BY INDIVIDUAL US GATEWAY AIRPORTS FROM 1977 TO 1987*

US Gateway\Year	77	78	79	80	81	82	83	84	85	86	87
Anchorage	1	1	3	2	2	2	2	3	4	3	4
Chicago	1	1	1	1	1	1	2	2	2	2	2
Honolulu	9	12	13	11	13	13	14	14	16	16	14
Los Angeles	5	5	6	6	5	8	8	7	9	8	7
Minneapolis	0	0	0	0	0	0	1	1	1	1	1
New York	1	1	1	1	1	1	1	2	1	1	1
Portland	0	0	0	0	0	0	1	1	1	1	2
San Francisco	4	5	2	3	4	6	6	5	5	7	7
Seattle	1	1	2	2	2	2	2	3	3	4	5
Total **	10	15	16	14	15	16	17	18	19	16	16

* Destinations to which US gateways have a nonstop service between 1977 and 1987 are listed in the Appendix.

** Total is not column total but the total number of different destinations served.

SOURCE: ICAO, Traffic by Flight Stage (Montreal:ICAO, July, 1977-1987).

TABLE 2.11

A 1977 VERSUS 1987 COMPARISON OF THE NUMBER OF AIRLINES AND DESTINATIONS SERVED IN THE CASE OF LOS ANGELES

1977		1987	
Number of Destinations	Number of Airlines	Number of Destinations	Number of Airlines
Auckland	Pan Am	Auckland	Air New Zealand
Papeete	Air New Zealand		United
		Nandi	United
	Pan Am		
		Papeete	Continental
	UTA		UTA
			Air France
Seoul	Korean Air		Qantas
Taipei	China Airlines	Sydney	Qantas
			United
Tokyo	Pan Am		
		Taipei	China Airlines
		Tokyo	All Nippon
			United
			Japan Airlines
			Singapore
			Northwest
			Malaysian
			Varig
5	5	7	14

SOURCE: Traffic by Flight Stage, 1977 and 1987.

air services to destinations in the Asia/Pacific region. These characteristics include a business community maintaining commercial and political relationships with people in Asia/Pacific countries, an ethnic community generating visiting friends and relatives traffic, and finally tourist attractions which are of primary interest to the leisure traveler. It is obvious that not too many US cities combine the aforementioned characteristics with a large enough population base to justify a nonstop airline service between them and points in the Asia/Pacific region.

Supply of and Demand for Air Service on the Transpacific Routes between US Gateways and Asia/Pacific Destinations

Table 2.12 confirms Honolulu's status as the principal gateway to the Asia/Pacific region. It also comes to the fore when one analyzes the supply of capacity measured in seats offered by airlines out of Honolulu. In 1977, transpacific airlines offered a total of 1,343,718 seats out of Honolulu which was equivalent to 53 percent of the transpacific total. However, a ten-year review reveals that Honolulu's dominance declined. In 1987, as shown in Table 2.13, its share of the total seats available decreased to less than 30 percent in 1987. Honolulu's demand developed similarly. Its share of the total passengers carried declined from 56 percent in 1977 to 35 percent in 1987. A major contributor to this declining trend could be the development of long-range aircraft which increasingly made technical stopovers of flights originating on the US mainland unnecessary.

Anchorage was the only other gateway airport whose share of seats supplied was less in 1987 than that in 1977. Its share of the total capacity supplied was 13 percent the highest after Honolulu has continuously decreased and was only 6 percent in 1987. Its passenger growth was moderate and increased by an annual average of 2.4 percent to 236,641 passengers. The reason for this trend seems to be the same as already cited for Honolulu, namely the introduction of new, long-range aircraft.

TABLE 2.12

CHANGE IN PASSENGER SEATS AVAILABLE FROM US GATEWAYS TO ASIA/PACIFIC DESTINATIONS FROM 1977 TO 1987*

Gateway**	1977	1987	Average Annual Percent Change
Anchorage	335,964	313,912	- 0.7 %
Chicago	43,950	198,482	+ 35.2 %
Honolulu	1,343,718	2,433,718	+ 8.1 %
Los Angeles	266,658	1,213,012	+ 35.5 %
New York	95,736	362,848	+ 27.9 %
San Francisco	324,450	724,448	+ 12.3 %
Seattle	127,980	577,774	+ 35.2 %
Total	2,538,456	5,824,194	+ 12.9 %

* The number of passenger seats available from 1978 through 1986 are in the Appendix.

** Minneapolis and Portland are not listed in Table 2.12 since they did not have airlines operating nonstop to the Asia/Pacific region in 1977. Minneapolis and Portland became gateways in 1982 and 1983 and airlines offered a total of 1,038 and 15,048 passenger seats, respectively. Minneapolis' passenger seats available declined to 732 in 1987 and fell by an average percentage rate of 8 %. Portland's passenger seats available increased to 63,966 in 1987 and had an average percentage growth of 136 %.

SOURCE: Calculations based on Traffic by Flight Stage, 1977-1987.

TABLE 2.13

PERCENTAGE SHARE OF INDIVIDUAL GATEWAYS OF TOTAL TRANSPACIFIC SEATS AVAILABLE FROM 1977 TO 1987

Gateway	1977	1987	Percent Change
Anchorage	13.2 %	6.6 %	- 6.6 %
Chicago	1.7 %	4.2 %	+ 2.5 %
Honolulu	53.0 %	26.6 %	- 26.4 %
Los Angeles	10.5 %	25.8 %	+ 10.3 %
Minneapolis	0 %	0 % *	0 %
New York	3.8 %	7.7 %	+ 3.9 %
Portland	0 %	1.4 %	+ 1.4 %
San Francisco	12.8 %	15.4 %	+ 2.6 %
Seattle	5.0 %	12.3 %	+ 7.3 %
Total**	100 %	100 %	

* Minneapolis' share is not listed because it is less than one tenth of 1 percent.

** Total does not equal 100 % due to rounding.

SOURCE: Calculations based on Traffic by Flight Stage, 1977-1987.

Additionally, Anchorage probably was also affected by the opening of new and more attractive gateways such as Portland.

The third most important gateway in 1977 was San Francisco which had a 12 percent share of both the total supply and demand. San Francisco's supply of capacity more than doubled within the ten years - from 324,450 passenger seats in 1977 to 724,448 passenger seats in 1987 - but its share of the total supply remained relatively constant. From 1986 to 1987, its total share increased by 4 percent to 16 percent which could be a reflection of United Airlines' beginning of transpacific flights from its San Francisco hub in the wake of the Pan Am Pacific network sale to United Airlines in late 1985.

Los Angeles, the fourth largest gateway in 1977 which accounted for 9 percent and 10 percent of the total supply and demand, respectively, turned out to be one of the largest gainers. While its supply increased from 266,658 seats in 1977 to 1,213,012 seats in 1987 - an average annual growth of 35 percent - its demand grew by an annual average of 51 percent from 135,814 passengers to 828,443 passengers. It seems that part of this growth stems from carriers which - with their new long-range equipment - bypassed Honolulu and started directly serving the US mainland. This was an important development for business travelers who have always been concerned with the shortest possible flight time. Also, besides Honolulu, Los Angeles

TABLE 2.14

CHANGE IN REVENUE PASSENGERS CARRIED FROM US GATEWAYS TO ASIA/PACIFIC DESTINATIONS FROM 1977 TO 1987*

Gateway**	1977	1987	Average Annual Percent Change
Anchorage	190,632	236,641	+ 2.4 %
Chicago	24,246	126,315	+ 42.1 %
Honolulu	784,074	1,215,464	+ 5.5 %
Los Angeles	135,814	828,443	+ 51.0 %
New York	44,172	250,020	+ 46.6 %
San Francisco	171,540	469,982	+ 17.4 %
Seattle	54,654	341,636	+ 52.5 %
Total	1,405,132	3,468,501	+ 14.7 %

* The number of revenue passengers carried from 1978 through 1986 are in the Appendix.

** Minneapolis and Portland are not listed in Table 2.14 since they did not have airlines operating nonstop to the Asia/Pacific region in 1977. Minneapolis and Portland became gateways in 1982 and 1983, and airlines carried a total of 433 and of 3,531 passengers to the Asia/Pacific region, respectively. Minneapolis' number of passengers carried declined to 303 in 1987 and fell by an average percentage rate of 6 %. Portland's number of passengers carried grew to 22,724 in 1987 and had an average growth rate of 135 %.

SOURCE: Calculations based on Traffic by Flight Stage, 1977-1987.

TABLE 2.15

PERCENTAGE SHARE OF INDIVIDUAL GATEWAYS OF TOTAL TRANSPACIFIC PASSENGERS CARRIED FROM 1977 TO 1987

Gateway	1977	1987	Percent Change
Anchorage	13.7 %	6.8 %	- 7.0 %
Chicago	1.7 %	3.6 %	+ 1.9 %
Honolulu	55.8 %	34.8 %	- 21.0 %
Los Angeles	9.7 %	23.7 %	+ 14.0 %
Minneapolis	0 %	0 % *	0 %
New York	3.1 %	7.1 %	+ 4.0 %
Portland	0 %	0.6 %	+ 0.6 %
San Francisco	12.2 %	13.4 %	+ 1.2 %
Seattle	3.9 %	9.8 %	+ 5.9 %
Total**	100 %	100 %	

* Minneapolis' share is not listed because it is less than one tenth of 1 percent.

** Total does not equal 100 % due to rounding.

SOURCE: Calculations based on Traffic by Flight Stage, 1977-1987.

was the only airport offering services to the Southeastern subregion with its growing tourist attractiveness. Furthermore, the city's large number of Asian communities provided demand for visiting friends and relatives and business traffic which is also reflected in the high share of non-US citizens flying out of Los Angeles.

Seattle had a growth pattern similar to that experienced by Los Angeles. Its supply of available seats had an annual average growth of 32 percent and increased from 127,980 to 577,774 over ten years. Simultaneously, its revenue passenger volume increased 45 percent. However, due to Seattle's smaller total passenger volume, it accounted only for 12 percent of the total supply and 9 percent of the total demand in 1987. Seattle's growth goes back mainly to its geographic location. By being the northernmost point on the US west coast, Seattle via the great circle route offers the shortest flight time between the USA and the Northeastern and Central subregion. The distance from Seattle to Tokyo is 4,781 miles while that from San Francisco and Los Angeles is 5,135 miles and 5,433 miles, respectively (45).

Part of the growth can be attributed to the fact that there is a strong community of interest between Seattle and Asian countries. Up to 92 percent of Seattle's port foreign waterborne trade by value is with countries

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(45)Port of Seattle,Seattle Harbor 1988.

in the Asia/Pacific region. Major export items to these countries include softwood lumber, hides, and frozen fish, while major import items are wearing apparel, data processing equipment, motor vehicle parts, and electrical and electronic equipment (46). Finally, partially responsible for the airport's growth was the fact that Seattle was United Airlines' first departure point to Tokyo in 1984.

New York's growth in the past as a transpacific gateway was rather constrained due to the payload-range limitations of the aircraft flying this route. In most cases a technical stop in Anchorage was necessary. Again, with the introduction of new long-range aircraft, more nonstop flights to the Northeastern subregion destinations such as to Tokyo and later Seoul were possible. At the same time, New York's importance as a major population, industrial, commercial, and tourist center further spurred growth which amounted to 250,020 passengers in 1987 and represented an annual average growth of 46.6 percent. In terms of New York's percentage share of total demand, it accounted for 3 percent in 1977 and grew over the years to 7 percent in 1987 indicating its limited possibilities to ever become a major transpacific gateway.

To date, Chicago played a secondary role as a major gateway airport to destinations in Asia/Pacific. In 1987,

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(46)Ibid.

its supply share and demand share was 3 percent and 4 percent, respectively. Nevertheless, the major surge in demand which went up by an annual average rate of 42 percent from 24,246 passengers in 1977 to 126,315 in 1987 certainly attracted a growing number of carriers. They included at first only Northwest but later also comprised Japan Airlines and United Airlines. The addition of United Airlines in particular played some role in the airport's growing passenger volume since United already having an established hub obviously started feeding its own trans-pacific flights out of Chicago rather than diverting passengers to other hubs (and therefore other airlines).

Finally, both Minneapolis and Portland are the latest addition to the number of gateway airports. Minneapolis which started receiving nonstop transpacific service in 1982 experienced very limited success and most likely became only a gateway because of Northwest Airline's hub in that city. Served by only one carrier - Northwest - the airport's small growth rates indicate that it had difficulty in attracting feed traffic from cities like New York and Chicago once they had established their nonstop long range flights to Asia/Pacific. At the same time, it can be assumed that the degree of community of interest between the city of Minneapolis and countries in the Asia/Pacific region is rather low due to Minneapolis' focus on manufacturing industries

and dairy/food companies which do not spur strong trade links. Finally, Minneapolis' relatively small population base of an estimated 2,262,000 in 1986 (47) does not generate substantial traffic either.

Portland exhibited strong growth of 135 percent in revenue passengers carried and number of seats available. As Seattle, Portland has an important port (the third largest on the US west coast) and is heavily involved in trade with countries in the Asia/Pacific region. Despite Portland's strong growth, its role as a transpacific gateway was insignificant. As shown in Table 2.13 and 2.15, Portland accounted for around 1 percent of total transpacific passenger seats available and for less than 1 percent of the total transpacific passengers carried between the USA and destinations in the Asia/Pacific region.

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(47)Cities of the USA (The Midwest), 223.

CHAPTER III

TRENDS IN MARKET SHARES AND LEVELS OF SERVICE OF CARRIERS IN TRANSPACIFIC MARKETS SERVED BY PAN AM AND UNITED AIRLINES

Data Sources

The data source for determining the market shares of individual airlines on selected transpacific routes is the ICAO publication "Traffic by Flight Stage" which was discussed on page 20 in Chapter II. The worldwide edition of the Official Airline Guide (OAG) is used as a data source for determining an airline's aircraft equipment, frequency, and number of stops in a given city pair market. The the OAG has some inherent limitations as a data source since there is often a considerable discrepancy between the flights listed and those actually flown.

Method

The markets for which market shares and quality of air service of airlines are analyzed include the following city pair markets:

- Chicago-Tokyo
- Honolulu-Tokyo
- New York-Tokyo
- Los Angeles-Tokyo
- San Francisco-Tokyo
- Honolulu-Hong Kong
- San Francisco-Hong Kong
- Honolulu-Sydney
- Los Angeles-Sydney

There are several reasons for choosing these city pairs. First, except for Chicago - Tokyo, all these markets were served by Pan Am between 1977 and 1985 and by United Airlines in 1986 and 1987. It is therefore possible to analyze how the replacement of Pan Am by United Airlines affected market shares and the quality of air service.

The researcher decided to include Chicago - Tokyo in this analysis in order to have an indication of United Airlines' performance in a transpacific market which it did not take over from Pan Am but started operating on its own.

Second, the researcher believes that the analysis of a few key markets provides sufficient "insight" into Pan Am's and United Airlines' overall performance in transpacific markets. Japan is an important market because it is a major industrial nation with substantial economic ties to the USA. With around 4 million passengers traveling between the USA and Japan in 1984, Japan is clearly the largest traffic point in the Pacific and the USA's fourth largest foreign destination behind Canada, Mexico, and Great Britain (1). Hong Kong with its fast growing economy could be considered representative for the newly industrialized countries (NIC) in the Asia/Pacific region which also include Taiwan and South Korea. The growth in trade volume between these countries and the USA by far outstripped that between the

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(1)The Pacific Division Transfer Case(CAB Docket no. 43065, Order 85-11-67), 14,670, quoted in Aviation Law Reporter,CAB, DOT, NTSB Cases From 1979 to 1989 (Chicago: Commerce Clearing House Inc., 1989).

USA and Japan (2).

Finally, Australia was chosen as a key market due to the fact that it is the largest trading partner of the USA located in the South Pacific. At the same time, Australia developed into a major tourist destination for US leisure travelers (3).

Market shares are found by dividing each transpacific airline's revenue passenger volume carried by the total revenue passenger volume on selected routes between the USA and the Northeastern, Southeastern, and Central sub-region.

Level of service is evaluated by using a quality service index (QSI). As shown below, the QSI consists of the three parameters: aircraft equipment, flight frequency, and number of enroute stops.

The weighting of each parameter is based on the type of aircraft equipment, the number of one-way flights per week, and the number of enroute stops.

Observations are taken from the OAG July issue from 1977 to 1987 to give an indication of the QSI on certain trans-pacific routes originally served by Pan Am and later on by United Airlines.

Out of the total flights listed for each city pair market, the researcher considered only those with a direct single plane service. Flights which involved different

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(2)See pages 49-52 in Chapter II.
(3)Reasons for this trend are listed on page 43 in Chapter II.

aircraft types were excluded because the QSI does not allow the simultaneous measurement of different aircraft types used in a given market. This situation occurred only in very few cases.

The researcher chose the QSI as a measurement of level of service for several reasons. First, the QSI was developed by the US Civil Aeronautics Board (CAB). Until its dissolution in 1984 as part of the Airline Deregulation Act, the CAB was an important federal agency responsible for the economic regulation of aviation. It regulated both domestic and international aviation matters involving the USA and also undertook extensive research which contributed to knowledge in various fields of aviation. The QSI was developed by the CAB in the 1960s and applied in many studies including a 1969/70 study titled "EFFECT ON TOTAL MARKET TRAFFIC OF CHANGE IN QUALITY OF SERVICE IN 292 ONE AND TWO-CARRIER MARKETS." The weights used in the QSI are given in Table 3.1.

Second, since the QSI wasused to measure the quality of air service in 292 markets, one can assume that it is applicable to a large number of markets with different characteristics.

Third, since the primary goal of this chapter is to evaluate changes in the service in the transpacific market place, the researcher believes that the CAB approach is suitable and therefore did not develop a new service index.

TABLE 3.1

Parameter	QSI Weight
Equipment	1.85 for B747 1.50 for DC-10, L1011 1.30 for DC-8-61 1.00 for B707
Frequency	1.00 for each one-way flight for each day of the week scheduled
Stops	1.00 for nonstop 0.55 for one-stop 0.40 for two-stop 0.03 for three-or-more stop

SOURCE: CAB, Docket 30309, Atlanta-Charleston Competitive Nonstop Case (Washington, D.C.: July 8, 1977), 3.

The QSI, however, has some inherent limitations one has to consider when measuring the quality of air service of airlines on transpacific routes. First, one has to keep in mind that the QSI was developed in the 1960s and the CAB did not have the staff time or computer access to update the QSI weight values (4). Therefore, the QSI weights have not been revised since the 1960s. The QSI weights assigned to the parameter "equipment" are one example. At the time when the QSI was designed, only one version of the B747 - the B747-100 - existed. Considering the fact that passenger capacity is one element in the CAB weighting process of aircraft equipment, the QSI does not reflect the different capacities of later versions

(4) CAB, Docket 30309, Atlanta-Charleston Competitive Non-stop Case (Washington, D.C.: July 8, 1977), 3.

of the B747 such as the B747 SP, the B747 SC, B747 SUD, or the B747-400. To account for these different versions and their implications for the quality of air service, it would be necessary to introduce a whole class of weights just for one aircraft.

Besides not only ignoring the advent of new aircraft, the QSI does not account for the retirement of older airplanes such as the DC-8 or the B707 either. It is obvious that the elimination of these aircraft would certainly change the relative weighting of the different aircraft left for evaluation.

Second, one has to consider that the CAB applied the QSI only to one and two-carrier markets. The researcher does not know the effect on the measurement of air service if the QSI is applied to transpacific markets which in most cases are served by more than two carriers.

Third, the QSI was developed for and applied to domestic markets in the USA. Since the economic and technical regulatory environment in the USA is different from that in international markets, it can be assumed that the QSI is not an ideal instrument to measure the quality of air service in transpacific markets.

Finally, the QSI only measures three parameters and therefore excludes other important aspects of air service such as the quality of inflight service, the price of air fares, and safety records. Table 3.2 displays some of the

factors which seem to be important to passengers when traveling on flights longer than five hours. However, the researcher believes that despite these limitations studying market changes by using the QSI will be helpful in understanding this market.

Due to the unavailability of a scale by which QSI values could be evaluated, the researcher decided to to compare the QSI of individual carriers with the annual average QSI in the city pair market they served.

TABLE 3.2

THE MOST IMPORTANT FACTORS IN CHOOSING AN AIRLINE*

Length of Flight	Under 2 hours		2-5 hours		Over 5 hours	
	%	Rank	%	Rank	%	Rank
Convenient schedule	67.8	1	59.9	1	44.2	1
Frequency of flight	33.8	2	13.3	11	6.5	11
On-time performance	30.7	3	22	4	16.1	10
Past experience	27.8	4	28.4	3	29.5	3
Low fares	18	5	19.1	6	22	6
Safety record	17.1	6	18.7	7	22.3	5
Attitude of personnel	16.8	7	21.4	5	23.6	4
Quality of inflight service	15.7	8	29.5	2	38.5	2
Aircraft type	10.4	9	14.2	9	21.1	7
Availability of business class	7.8	10	14.1	10	16.2	9
Quality of ground service	6.8	11	5.8	12	4.8	13
National flag carrier	6.6	12	4.9	13	5.3	12
Quality of food and drinks	6.5	13	15.1	8	20.5	8
Frequent flyer program	3.2	14	3.8	14	4.3	14
Others	1	15	0.9	15	1.1	15

* These results are based on the findings of a study done by the International Airline Passenger Association (IAPA) in 1984. Questionnaires were sent to 93,000 members (mostly high frequency travelers) of which some 9,000 responded.

SOURCE: The most important factors in choosing an airline, Avmark Aviation Economist(December 1985), 17.

This comparison will allow an interpretation of the quality air service in terms of "above" or "below" the QSI average.

The QSI of airlines which served an Asia/Pacific destination only for a single year between 1977 and 1987 was not calculated since the impact of these airlines on the QSI in a given city pair market is marginal. However, transpacific flights started by airlines in 1987 were subject to QSI calculations because these flights might have been continued through succeeding years and therefore could become part of future research in this field.

In order to evaluate the performance of United Airlines in former Pan Am transpacific markets, the researcher compared the market shares and QSI of 1985 - Pan Am's last year of international transpacific operations - with 1987 - United Airlines' first full year of international transpacific operations. Particular consideration in this analysis is paid to the arguments of US and Asian airlines opposing the transfer of the Pan Am Pacific Division to United Airlines. They mainly argued that United Airlines would gain an unfairly high share of the USA - Asia/Pacific passenger market because of its large domestic US network and dominant APOLLO computer reservation system (CRS). The researcher analyzed the rationale of these arguments and compared the theoretical impact of United Airlines' domestic network and CRS on its transpacific market shares with the actual development.

Finally, the researcher discussed the relationship between the QSI and market shares. Conventional wisdom suggests that market share increases if quality improves. The researcher quantitatively showed whether or not this positive correlation existed between the QSI and market shares of transpacific airlines.

Pan Am's Transpacific Routes Before the Pacific Division Sale in 1985

A discussion of Pan Am's transpacific service would not be complete without mentioning how these services started in the first place. By 1985, Pan Am had performed 50 years of transpacific airline services. In 1930, Juan Trippe, Pan Am's founder and chairman until 1968, unsuccessfully attempted to develop a transatlantic route. Because of the range limitations of aircraft in service at that time, an intermediate stop in a northern country or midatlantic island was necessary. This operational problem, however, turned into a political one since the governments of several European countries refused Pan Am access to these points.

Discouraged by these obstacles, Juan Trippe shifted his focus to the Pacific and Charles Lindbergh who worked as a technical advisor for Pan Am, conducted a survey from New York to China in 1931. On November 1935, Pan Am inaugurated scheduled transpacific mail service from San Francisco to

Hong Kong. Since intermediate points such as, Midway Is., Wake Is., Guam, and Manila were under US jurisdiction, political problems similar to those in the North Atlantic did not arise. On October 21, 1936, Pan Am introduced scheduled passenger flights on the same route (5). From there on, the number of countries served was steadily increased and by 1984 included destinations listed in Table 3.3.

Table 3.3

ASIA/PACIFIC DESTINATIONS SERVED BY PAN AM IN 1985

Northeastern	Central	Southeastern	Western
Bejing	Bangkok	Auckland	Bombay
Hong Kong	Manila	Melbourne	Delhi
Osaka	Singapore	Sydney	Karachi
Seoul			
Shanghai			
Taipei			
Tokyo			

SOURCE: Pan Am, Pan Am Annual Report 1984, 1.

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(5)R.E.G. Davies, Pan Am - an airline and its aircraft (New York: Orion Books, 1988), 125.

Market Shares and Quality of Service on Selected Transpacific Routes

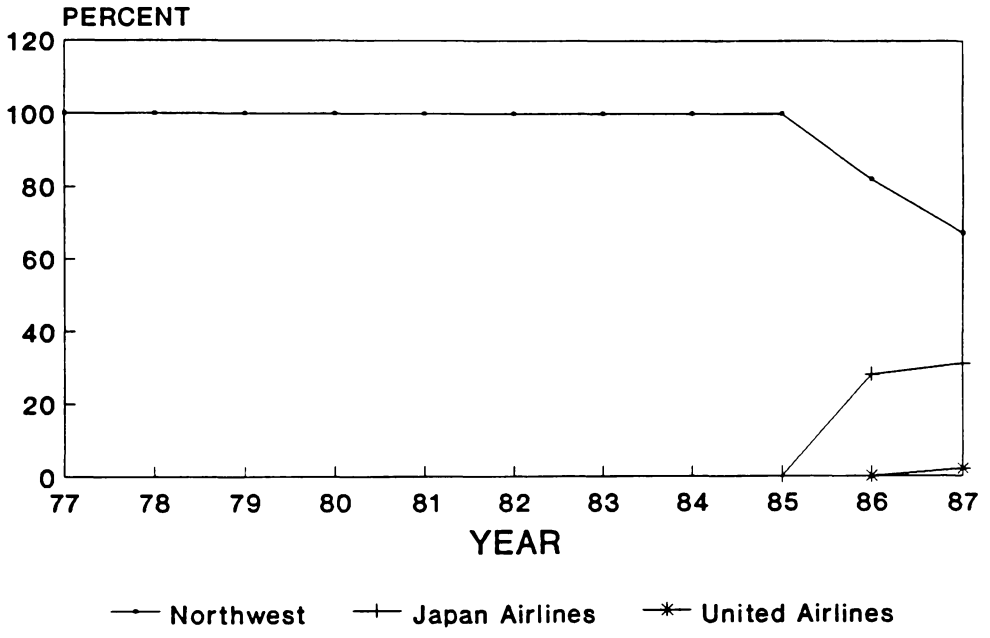
Chicago - Tokyo

This city pair market is characterized by relatively stable market shares. From 1977 to 1985, Northwest was the only carrier authorized to serve this route on a nonstop basis and correspondingly held a market share of 100 percent (Figure 3.1). Japan Airlines offered nonstop flights in this market in 1986 and captured an initial market share of 28 percent. However, this gain must be put into perspective since Japan Airlines started serving Chicago - Tokyo in 1983 and therefore most likely already established a market presence. Although United Airlines also started flights to Tokyo in 1983, its nonstop flights did not begin until 1987. Its market share was two percent only and was an indication of the low market penetration.

There are several possible explanations for this development. By serving the Chicago - Tokyo route some years earlier than United Airlines, Northwest and Japan Airlines had time to establish market presence and to learn about the inherent characteristics of passenger traffic in this city pair market. United Airlines' lack of marketing expertise in serving international markets in the Asia/ Pacific region might have contributed to its low initial market share.

The QSI on this route was the highest for Northwest and

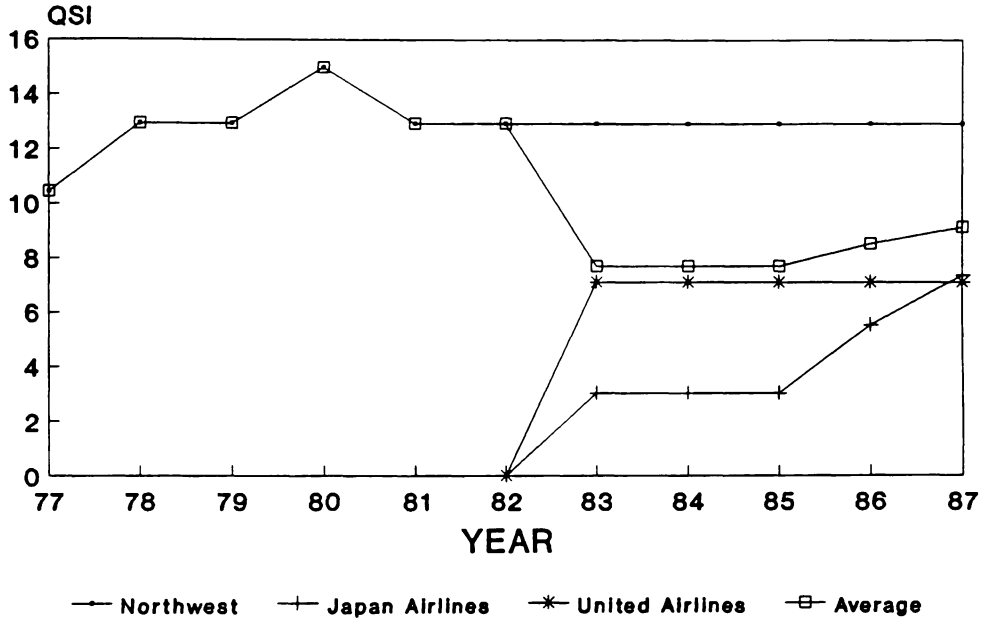
THE DEVELOPMENT OF MARKET SHARES IN THE CHICAGO - TOKYO MARKET FROM 1977 TO 1987



SOURCE: Calculations based on, Traffic by Flight Stage, 1977-1987.

FIGURE 3.2

THE DEVELOPMENT OF THE QUALITY SERVICE INDEX IN THE CHICAGO - TOKYO MARKET FROM 1977 TO 1987



SOURCE: Calculations based on OAG, Worldwide Edition, (Oak Brook, Illinois: July, 1977-1987).

showed minor fluctuations over the 10 year period from 1977 to 1987. Starting with a QSI of 10.45, Northwest increased its quality of air service to an index of 12.95 and 14.99 in 1978 and 1979, respectively. The increase in 1978 stemmed from having 7 nonstop flights (versus only 4 in 1977) while the increase in 1979 was the result of adding two weekly one-stop flights. In 1982, however, Northwest decided to return to a frequency with 7 nonstop flights a week which in turn resulted in a decreased QSI. Except for the years when Northwest was the only airline offering nonstop services and therefore had a QSI equal to the QSI average, Northwest's service quality was significantly above the QSI average from 1982 to 1987.

The year of 1983 saw the addition of the two formidable competitors United Airlines and Japan Airlines. The increase in the number of carriers resulted in a decline of the average QSI due to the fact that the total QSI was divided into three instead of one carrier.

Japan Airlines' QSI was the lowest of all carriers in this market. With a QSI of 3.05 from 1983 through 1985, Japan Airlines' QSI was only one third of the QSI average.

United Airlines did not change its initial QSI of 7.12 in 1977 and therefore also performed below the QSI average. The QSI values of both carriers remained below that of Northwest due to a lower frequency and flights involving one stop.

Honolulu - Tokyo

The Honolulu - Tokyo market was served on a nonstop basis by the two US carriers Northwest and Pan Am and by the two Asian carriers Japan Airlines and Korean Air.

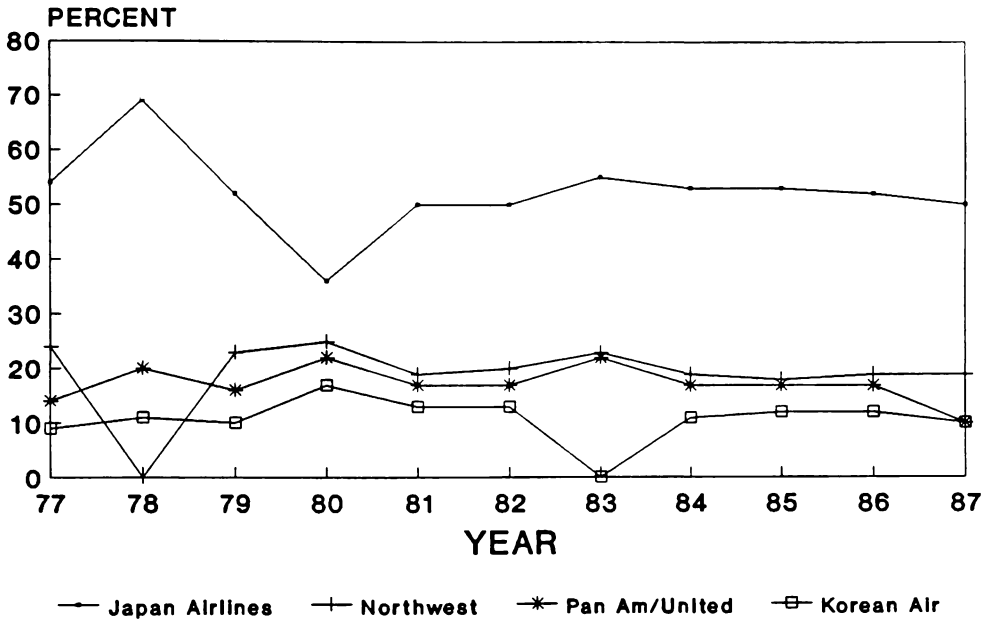
Hawaii is the most attractive overseas vacation destination for Japanese leisure travelers and the share of non-US citizens in this market is traditionally above 80 percent.

Japan Airlines' continuous high market share (54 percent and 53 percent in 1977 and 1985, respectively) as shown in Table 3.6 is a reflection of the strong flag carrier loyalty among Japanese travelers.

In 1980, the number of passengers traveling to Tokyo fell by 39 percent to 392,532 from 642,906 in 1979. A most likely explanation for this decline is the oil crisis of 1979 with a following worldwide recession which in turn led to a softening of demand for air transportation.

Japan Airlines lost market share which fell by 16 percentage points to 36 percent which suggests - considering the high flag carrier loyalty among Japanese travelers - that the decrease in passengers particularly occurred in the Japanese travel market. All other carriers stepped up their market share to a level which was the highest in the entire period analyzed. Pan Am's share grew to 22 percent while those of Korean Air and Northwest increased around 50 percent indicating that the Japanese travel

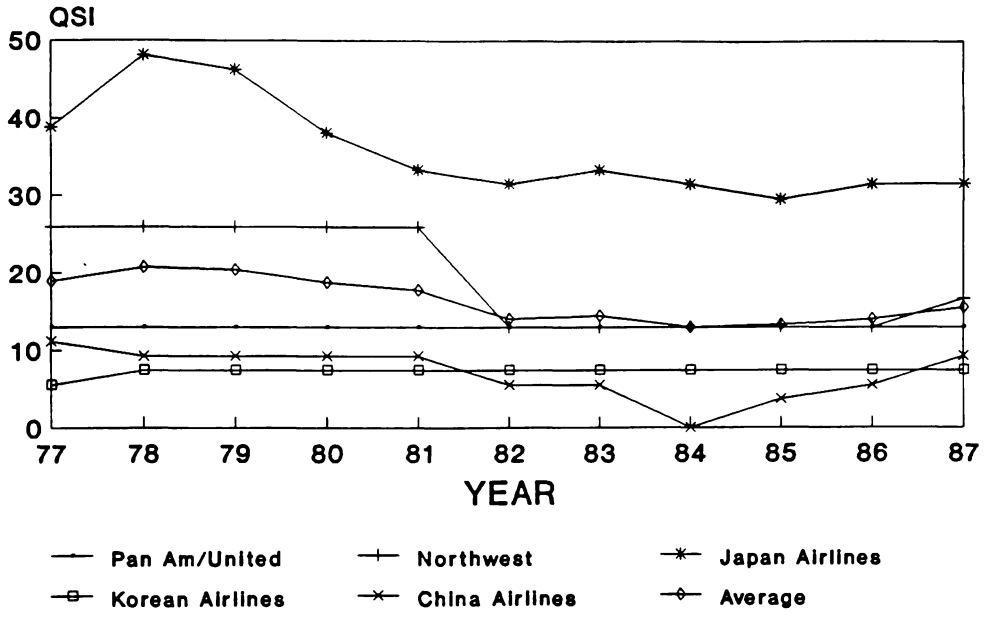
THE DEVELOPMENT OF MARKET SHARES IN THE HONOLULU - TOKYO MARKET FROM 1977 TO 1987



SOURCE: Calculations based on Traffic by Flight Stage, 1977-1987.

FIGURE 3.4

THE DEVELOPMENT OF THE QUALITY SERVICE INDEX IN THE HONOLULU - TOKYO MARKET FROM 1977 TO 1987



SOURCE: Calculations based on OAG, Worldwide Edition, July, 1977-1987.

market started recovering. Simultaneously, the market share of all other competitors declined to former levels. Pan Am's share, for example,decreased to 17 percent.

The quality of service analysis as shown in Figure 3.4 displays a picture similar to that of market shares suggesting a correlation between QSI and market share.

When compared with its competitors, Japan Airlines' services exhibited the highest QSI which was 38.85 in 1977 and as high as 48.1 in 1978. Japan Airlines' QSI values were significantly above the QSI average in this market.

Responsible for this fact is the enormously high number of flight frequencies (in 1978, Japan Airlines had 26 (!) weekly flights between Honolulu and Tokyo). Since all flights between Honolulu and Tokyo were nonstop and used B747s, changes in the QSI can be clearly attributed to changes in flight frequencies.

As shown in Figure 3.4, both Pan Am (and later United Airlines) and Korean Air did not change their flight frequencies during the 1977 - 1987 period. While Pan Am offered 7 weekly flights, Korean Air maintained a frequency of 4 flights. Both carriers' QSI were below the average QSI.

In 1977, Northwest's QSI 25.9 was the second highest in the Honolulu-Tokyo market. Until 1982, this QSI did not change. From 1982 to 1986, Northwest decreased its weekly flight frequency to 7 and therefore had the same QSI as Pan Am. In 1987, Northwest increased its QSI which was

16.65 and therefore above the QSI average. The most volatile QSI is displayed by China Airlines which continuously altered its weekly flight frequencies.

New York - Tokyo

This market presents one of the fastest growing trans-pacific markets. It grew from 44,172 passengers in 1977 to 211,557 passengers in 1985. There were only three carriers offering nonstop services from New York to Tokyo.

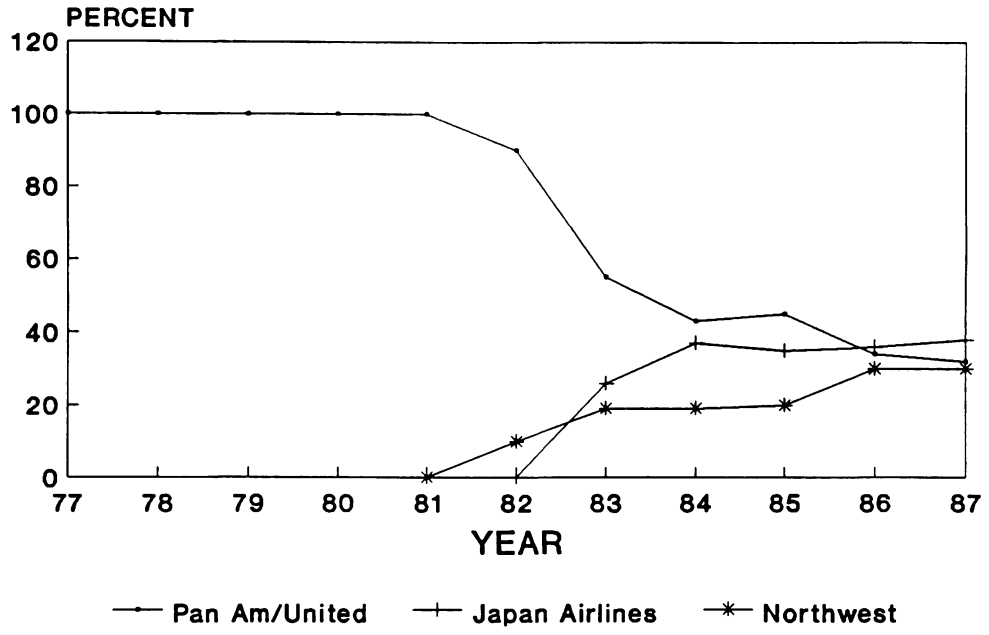
As exhibited in Figure 3.5, from 1977 to 1981, Pan Am was the only airline and held a 100 percent market share of the nonstop passengers on this route. Pan Am used the B747 SP which was the only airplane in the 1970s capable of flying distances like New York - Tokyo nonstop. Most likely due to the restricted payload of that airplane, Northwest and Japan Airlines did not use the B747 SP but rather opted for aircraft equipment which could carry a larger payload but had to make enroute stops.

In 1982, Northwest started offering nonstop services and captured a market share of 10 percent. While this can be considered a modest share, Northwest was able to double its share to 20 percent by 1985.

A similar development was experienced by Japan Airlines. Entering the market on a nonstop basis in 1983, it gained an immediate share of 26 percent which grew to 38 percent four

FIGURE 3.5

THE DEVELOPMENT OF MARKET SHARES IN THE NEW YORK - TOKYO MARKET FROM 1977 TO 1987



SOURCE: Calculations based on Traffic by Flight Stage, 1977-1987.

years later.

While Northwest and Japan Airlines improved their market share positions, that of Pan Am deteriorated from 100 percent in 1981 to 55 percent in 1983. The drastic decline is an indication that Pan Am's competitive position based on factors other than its nonstop capability was rather weak and travelers in this market were not particularly receptive to Pan Am's service and decided to switch over either to Northwest or Japan Airlines as soon as their nonstop service became available.

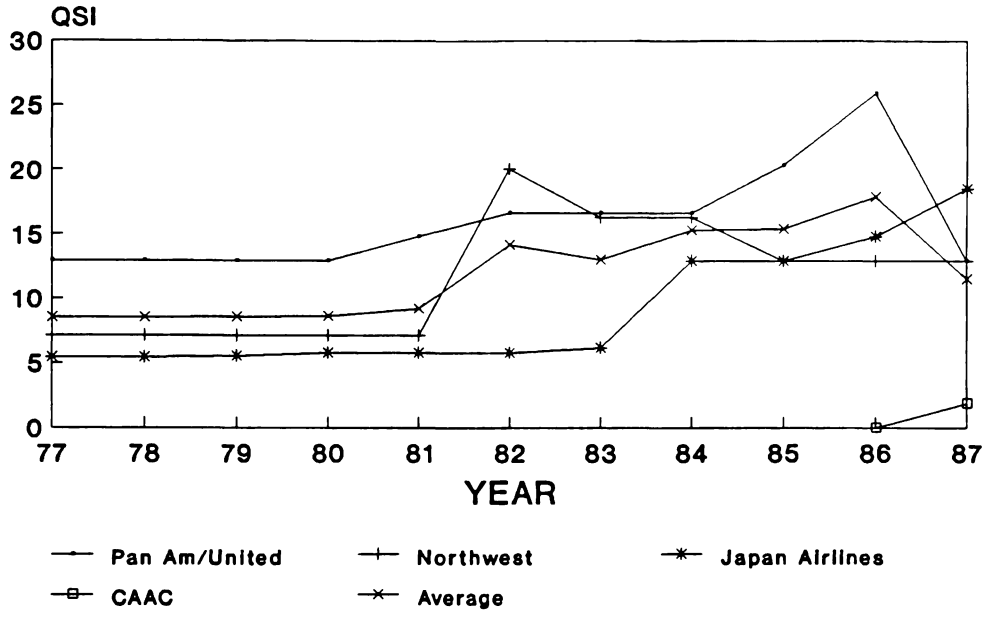
After taking over the Pacific Division from Pan Am in 1985, United Airlines was unable to stop the declining market share trend. In 1987, United Airlines carried fewer passengers than Pan Am in 1985 although the passenger volume grew from 211,557 to 250,020 in the same time frame.

Reasons for this decline which is the largest in all markets analyzed, include flight delays and cancellations as a result of operational problems and will be discussed in more detail in a later section of this chapter.

The QSI of Pan Am increased substantially over the 1977 - 1985 period. By being the only airline offering nonstop services from New York, Pan Am clearly had the highest quality of air service as indicated by a QSI of 12.95 in in 1977. Since Pan Am continued using B747 equipment, the change in its QSI was a direct result of stepping up the flight frequencies. In 1985, Pan Am offered 11 weekly

FIGURE 3.6

THE DEVELOPMENT OF THE QUALITY OF SERVICE INDEX IN THE NEW YORK - TOKYO MARKET FROM 1977 TO 1987



SOURCE: Calculations based on OAG, Worldwide Edition, July 1977-1987

flights and had a QSI of 20.35 which was almost 5 units higher than the QSI average of 15.41. When United Airlines took over the route from Pan Am in 1986, it stepped the weekly flight frequency resulting in a QSI of 25.9 which was the highest QSI value in this market.

While Northwest offered a one-stop service on this route and had a QSI of 7.12 in 1977, Japan Airlines flew to Tokyo with a DC 10 four times a week and a DC 8 three times a week and had a QSI of 5.45. The quality of Japan Airlines' air service did not improve drastically due to the fact that it continued flying the DC 8 until 1980. In 1980, Japan Airlines switched completely to DC 10 equipment which still had to make an intermediate stop. The QSI slightly increased to 5.78 but did not increase until 1983, when Japan Airlines used B747 equipment. Since Japan Airlines used the B747 only twice a week out of the total of seven weekly flights (the five remaining flights were flown with a DC 10) the quality of its services was below that of Pan Am and Northwest.

Like in no other market were the QSI differences on the New York - Tokyo route mainly the result of the various aircraft types used. Responsible was the unavailabilty of an airplane able to carry large payloads on distances like New York - Tokyo nonstop. Carriers used the DC-8, DC-10, B747 SP, and B747-100 until long haul B747 equipment with a large enough payload carrying capability became available

in 1982.

This city pair market also reveals how small the correlation between a carrier's market share and QSI can be. Although Pan Am kept on improving its QSI as a result of increasing the flight frequencies to Tokyo, the development of its passenger market shares shows a continuous decline indicating that passengers valued service factors other than frequency as more important. Northwest's and Japan Airlines' better performance in these service factors was likely responsible for their market share improvement.

Los Angeles - Tokyo

As in the New York - Tokyo market, Pan Am was the only carrier offering nonstop services in 1977. According to Figure 3.7, it held a 100 percent share of the nonstop passenger market in 1977.

The following year, Japan Airlines entered the market on a nonstop basis and captured a market share of 37 percent. The fact that Japan Airlines had already captured market share with its flights making intermediate stops was largely responsible for this. Also, the high share of non-US citizens in this market (traditionally above 50 percent) seemed to result in the preference of a flag carrier like Japan Airlines. Japan Airlines quickly established market

dominance and had a share of 58 percent the following year.

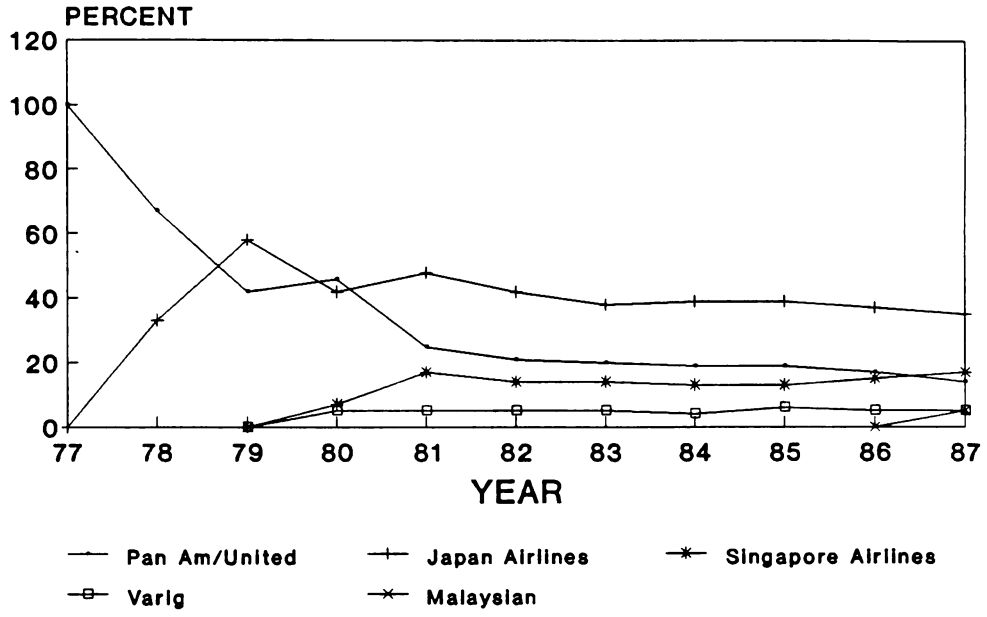
The addition of Singapore Airlines and the Brazilian carrier Varig to the Los Angeles - Tokyo market led to a decrease of Japan Airlines' share which was 42 percent in 1980. Singapore Airlines and Varig gained a share of 7 percent and 5 percent, respectively. While Varig's share remained stationary and changed by only 1 percent from 1978 to 1987, Singapore Airlines increased its market share by 10 percent to 17 percent in 1981. Part of this gain was certainly its reputation as a high quality carrier.

Pan Am's share in 1981 was 25 percent down from 46 percent the preceding year. Responsible for this development was probably the aforementioned addition of Singapore Airlines to the market.

At the same time, Northwest also entered the market and had a market share of 10 percent in 1981. Pan Am did not recover from its decline and actually continued losing market share to competing airlines. In 1985, Pan Am's was 19 percent. The replacement of Pan Am by United Airlines did not stop the declining market share trend. United Airlines claimed 17 and 14 percent in 1986 and 1987, respectively. Japan Airlines, however, was not one of the airlines which increased their market shares. Its share declined further from 48 percent in 1981 to 35 percent in 1987. The clear winner was Northwest which claimed one quarter of the market in 1987. Singapore Airlines

FIGURE 3.7

THE DEVELOPMENT OF MARKET SHARES IN THE LOS ANGELES - TOKYO MARKET



SOURCE: Calculations based on Traffic by Flight Stage, 1977-1987.

managed to sustain its share of around 14 percent throughout the period.

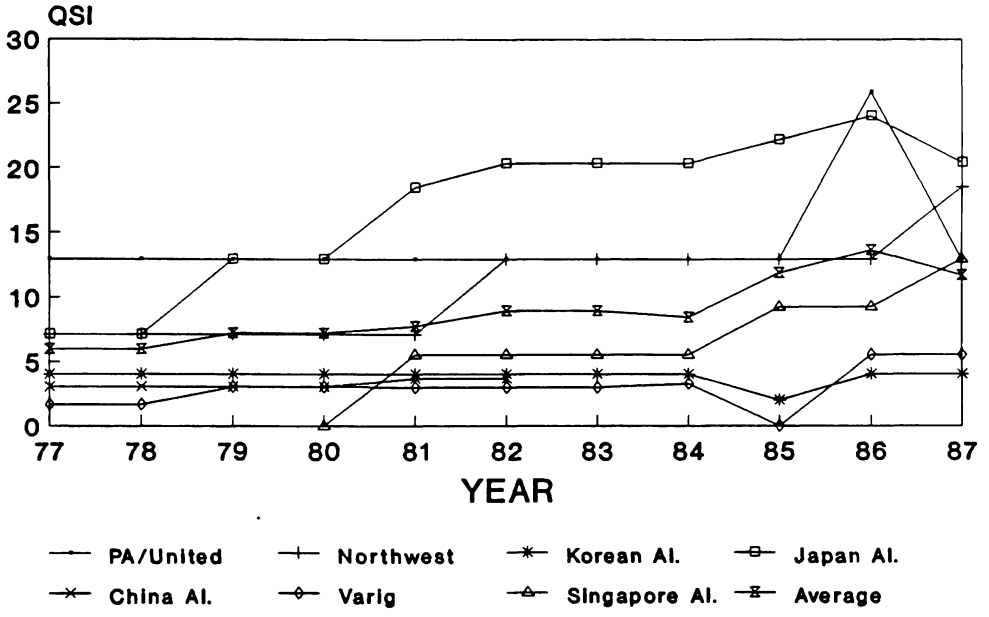
As Figure 3.8 shows, the quality of air service of Japan Airlines turned out to be the highest between 1981 and 1985. Japan Airlines started with a QSI of 7.12 in 1977. The fact that Japan Airlines' seven B747 weekly flights made one intermediate stop was responsible for this QSI. In 1979, Japan Airlines changed all its seven one-stop flights into nonstop flights and therefore received a QSI of 12.95. This was the first time when Japan Airlines significantly performed above the average QSI. The only airline having such a high QSI at that time was Pan Am which already had seven nonstop flights in 1977. Japan Airlines steadily increased its quality of air service by introducing more nonstop flights. In 1986, it had 14 flights a week between Los Angeles and Tokyo, making it the carrier with the highest QSI in the 1977 - 1987 period.

Pan Am throughout the entire period did not change its flight frequencies and therefore had a constant QSI of 12.95. While Pan Am's, and from 1986 on, United Airlines' quality of air service was above the average QSI, the difference between Pan Am's QSI and the average QSI narrowed over the years. Reason for this development was the fact that the average QSI improved due to a general increase in flight frequencies and the introduction of more nonstop flights.

Northwest started out with seven weekly B747 flights

FIGURE 3.8

THE DEVELOPMENT OF THE QUALITY OF SERVICE INDEX IN THE LOS ANGELES - TOKYO MARKET



SOURCE: Calculations based on OAG, Worldwide Edition, July, 1977-1987.

which all made intermediate stop on their way to Tokyo. This did not change until 1982, when Northwest inaugurated nonstop flights leading to an increase of the QSI from 7.12 to 12.95.

Singapore Airlines started its services to Tokyo in 1981 with three weekly nonstop flights. Continuing with this low frequency in 1982, it is interesting to notice that Singapore Airlines captured a 17 percent market share as discussed before. Again, Singapore Airlines' high quality of inflight service and/or a competitive fare structure were most likely responsible for this. Singapore Airlines' QSI of 5.55 did not change until 1985 when the number of weekly flights was increased to five. The QSI grew to 9.25 as a result of this step and reached a peak in 1987 with a value of 12.95.

The quality of Varig's air service remained relatively stable over the entire period. It nevertheless started very low - 1.65 in 1977 and 1978 - because of using a B707 for the flight. The QSI went up to 3.05 when the B707 was replaced by a DC 10 in 1980. The quality of service of Varig was significantly below the QSI average in this market.

Korean Air's QSI remained unchanged at 4.07 except for 1985 when it went down to 2.04. Korean Air used a B747 which performed four weekly flights with one stop. The low QSI suggests a poor service.

China Airlines offered three weekly flights making one stop. Its QSI was 3.07. In 1982, China Airlines

decreased its frequency to two weekly flights. The QSI nevertheless increased because these flights were nonstop. In 1983, the QSI declined to zero because China Airlines discontinued its flights to Tokyo.

The Los Angeles - Tokyo market is characterized by its growth in the number of carriers. While Pan Am was the only carrier offering nonstop services in 1977, the number of carriers flying on this route increased to nine (of which two did not report traffic data to ICAO) by 1987.

As in other city pair markets, Pan Am's market share declined with the addition of new competitors. However, nowhere was the decline more drastic as on this route where Pan Am's share decreased from 100 percent in 1977 to 14 percent in 1987. This indicates that the new carriers' marketing mix was not only extremely successful in attracting new travelers but also existing travelers who previously flew on Pan Am.

It is interesting to note that most of the new carriers were able to increase their initial market shares which suggests that Los Angeles - Tokyo is a major growth market.

The average QSI in this market continuously improved as several airlines increased their flight frequencies. In particular the years 1985 and 1986 saw a significant improvement in the average QSI which might be at least partially the result of the market entrance of United Airlines and its decision to double the number of flights

to Tokyo which could have been in turn a signal to competing carriers that future competition would be carried out in terms of frequency.

San Francisco - Tokyo

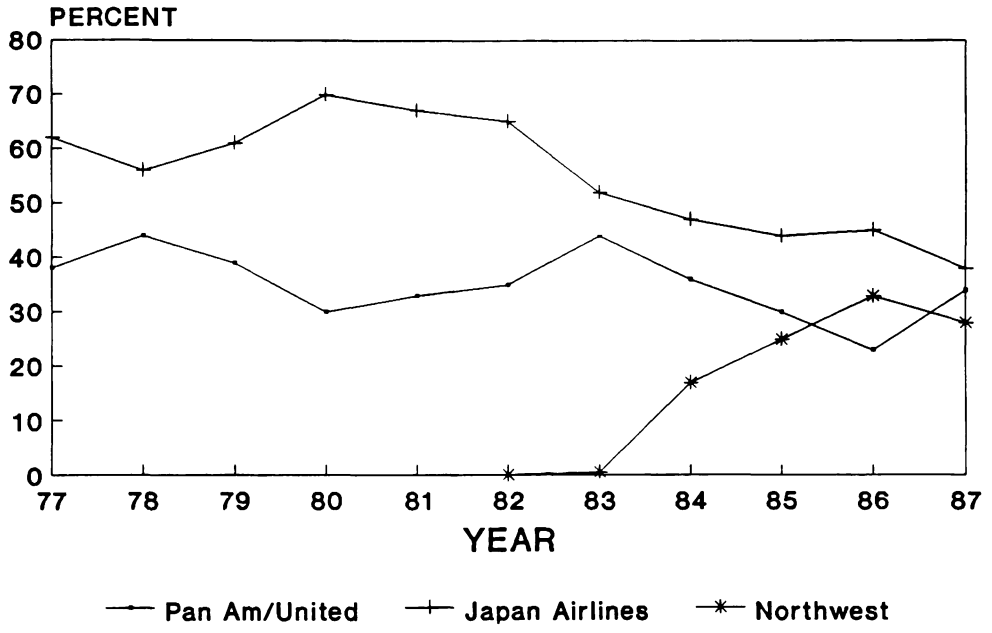
Until 1983, this city pair market was divided between the two carriers Pan Am and Japan Airlines. Pan Am's share fluctuated between a low of 30 percent in 1980 and a high of 44 percent in 1983 (Figure 3.9). Japan Airlines dominated this market and had market shares above 50 percent. This was the case until 1983, when Northwest entered the market. After an initial low share of .5 percent, Northwest quickly built up it presence and claimed a share of 17 and 25 percent in 1984 and 1985, respectively.

The traffic volume grew by 48,564 passengers from 201,399 in 1984 to 249,963 in 1985 and it seems that Northwest's increase captured most of this growth since it almost doubled its traffic from 33,630 from 1984 to 62,402 in 1985. Northwest's long experience as a transpacific carrier certainly contributed to relatively quickly capturing a substantial portion of the traffic growth in this market.

Japan Airlines' declining market share from a high of 70 percent in 1980 to 38 percent in 1987 is mainly a reflection of the decreasing share of non-US citizens in this market which declined from 62 percent in 1979 to 51 percent in 1987.

FIGURE 3.9

THE DEVELOPMENT OF MARKET SHARES IN THE SAN FRANCISCO - TOKYO MARKET FROM 1977 TO 1987



SOURCE: Calculations based on Traffic by Flight Stage, 1977-1987.

United Airlines was able to step up its market share after operating on the San Francisco - Tokyo route for a year. While it had a share of 23 percent in 1986, United Airlines claimed 34 percent of the traffic volume in 1987. Considering that United Airlines' lack of international marketing experience contributed to a declining market share in several of the transpacific markets analyzed, the increase is most likely attributable to the fact that San Francisco is one of United Airlines' main US domestic hubs where transpacific passengers could be offered a large number of convenient connection flights to/from other US cities.

The QSI of Pan Am in the San Francisco - Tokyo market did not change throughout the 1977 - 1985 period and was 12.95. Pan Am performed above the QSI average.

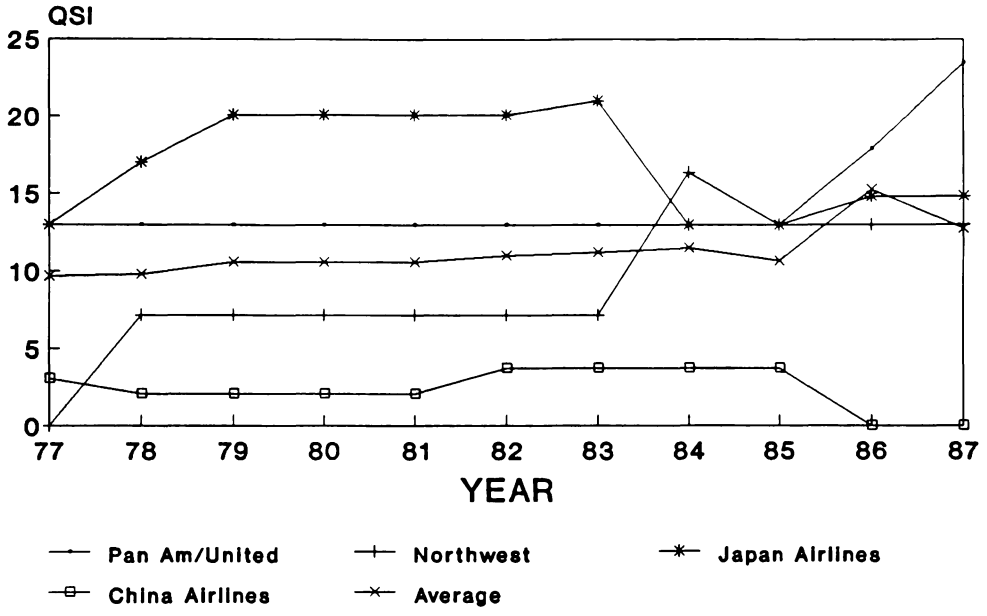
Responsible for Pan Am's stable performance was the fact that all of its flights were seven weekly nonstop flights with a B747. United Airlines replaced Pan Am in 1986 and increased the flight frequency which resulted in a higher QSI of 17.9 and 23.45 in 1986 and 1987, respectively.

As already observed in other city pair markets analyzed, the increase is obviously a reflection of United Airlines' decision to become more competitive by introducing a higher flight frequency.

Japan Airlines also started with a QSI of 12.95 in 1977. The following year, however, it decided to offer four

FIGURE 3.10

THE DEVELOPMENT OF THE QUALITY OF SERVICE IN THE SAN FRANCISCO - TOKYO MARKET FROM 1977 TO 1987



SOURCE: Calculations based on OAG, Worldwide Edition, July, 1977-1987.

additional one-stop flights which led to an increase of the QSI by 4.07 to 17.02. In 1983, Japan Airlines increased the number of the four one-stop flights to seven thereby increasing the QSI to 20.07 which was firmly above the average. This did not change until 1984 when Japan Airlines cut back on its weekly flight frequency and offered seven nonstop flights "only".

In 1985, Japan Airlines stepped up its weekly flight frequency. Like in the New York - Tokyo market, Japan Airlines' increase in flight frequency seems to be largely a response to United Airlines' increase in weekly flights. This in turn could mean that frequency might play a more important role in maintaining/improving an airline's competitive position in certain markets.

With 7.12, Northwest had the second lowest QSI after China Airlines between 1978 and 1983. Its QSI indicated a service quality below average. This situation changed in 1984 when Northwest not only offered seven one-stop flights but also inaugurated five nonstop flights to Tokyo which boosted its QSI to 16.37.

China Airlines' QSI was 3.05 in 1977. Due to a cutback in frequency, the quality of air service decreased to 2.04. In 1982, the QSI went up to 3.7 because of the conversion of the two one-stop flights into nonstop flights.

Honolulu - Hong Kong

As shown in Figure 3.11, in the entire period from 1977 to 1985, Pan Am served the Honolulu - Hong Kong market on a nonstop basis only for one year in 1980. Its market share was 3 percent.

Singapore Airlines was the major competitor in the market and accounted for a 97 percent market share in 1980, the year when it started offering nonstop flights in this market. It is likely that the dominance of the high quality airline Singapore Airlines made Pan Am drop its nonstop service after one year. From 1981, Singapore Airlines claimed a 100 percent market share of the nonstop passenger traffic.

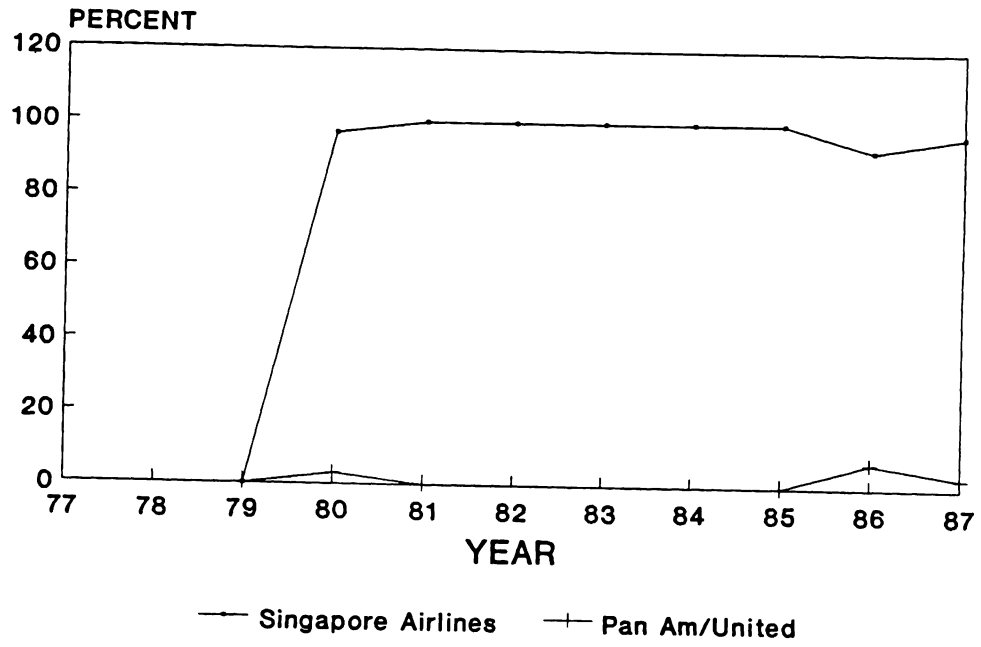
United Airlines entered the market in 1986 and gained a modest share of 7 percent which declined to 3 percent in 1987.

An analysis of the QSI is shown in Figure 3.12 and reveals that Pan Am had a QSI of 3.7 in 1977. In that year, Pan Am offered five weekly flights with two stops. The following year, Pan Am's QSI was marginally higher than the average QSI of 6.96. The quality of air service as indicated by the increase of the QSI to 7.12 can be attributed to Pan Am's increase of frequency to seven flights with only one stop. In 1980, Pan Am stopped serving Hong Kong from Honolulu.

In 1978, Singapore Airlines entered the market with a DC 10 which flew four times a week and made one intermediate

FIGURE 3.11

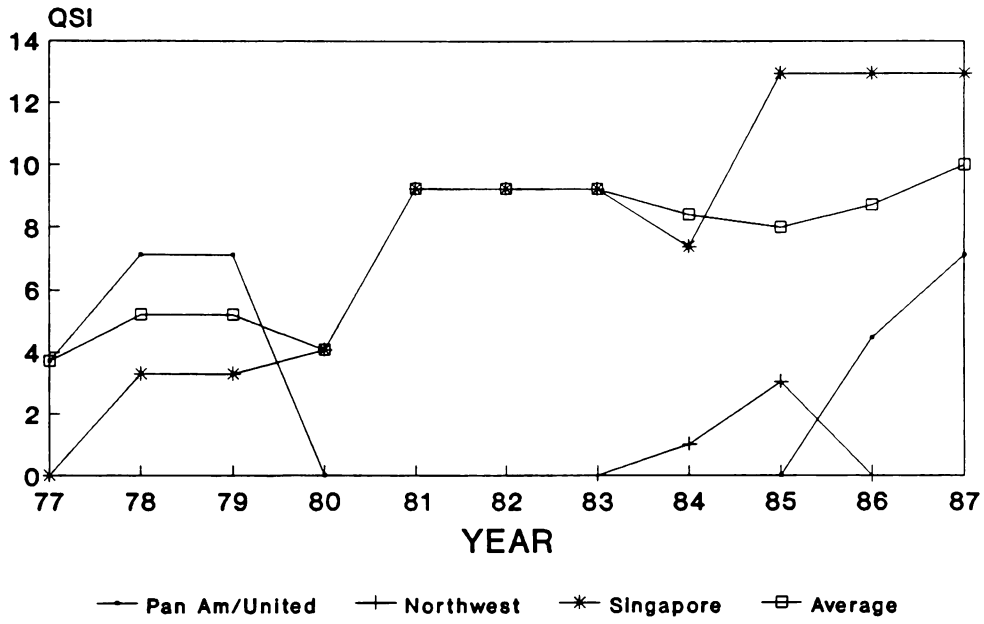
THE DEVELOPMENT OF MARKET SHARES IN THE HONOLULU - HONG KONG MARKET FROM 1977 TO 1987



SOURCE: Calculations based on Traffic by Flight Stage, 1977-1987.

FIGURE 3.12

THE DEVELOPMENT OF THE QUALITY SERVICE INDEX IN THE HONOLULU - HONG KONG MARKET FROM 1977 TO 1987



SOURCE: Calculation based on OAG, Worldwide Edition, July, 1977-1987.

stop. The QSI that year was 3.3. The carrier then switched over to B747 equipment which increased the QSI to 4.07.

However, the large increase in QSI did not take place until 1981 when Singapore Airlines served the route with five weekly nonstop flights. The decline from 9.25 to 7.4 in 1984 went back to a cutback in flight frequencies.

Northwest began flying to Hong Kong in 1984 with one weekly flight making one enroute stop. The following year, both Singapore Airlines and Northwest increased their weekly flight frequencies resulting in a QSI of 12.95 and 3.05, respectively.

United Airlines started serving the Honolulu - Hong Kong market in 1986 and had a QSI of 4.5 which was increased to 7.12 in 1987 because of a higher flight frequency. United Airlines' only competitor was Singapore Airlines which had a much higher quality service as shown by the QSI values.

The Honolulu - Hong Kong market is characterized by its low number of carriers which is a reflection of the lower passenger volume in this market. The lack of community of interest between the two cities certainly contributes to this.

However, a low number of carriers does not necessarily mean a low QSI as demonstrated in this market. Singapore Airlines steadily increased its QSI by converting to B747 equipment and increasing the number of weekly flights.

This development could also be an indication of

Singapore Airlines' belief that this city pair market is a market with future growth potential.

San Francisco - Hong Kong

As Figure 3.13 displays, Pan Am was the only carrier offering nonstop services between San Francisco and Hong Kong. It held a market share of 100 percent of the nonstop passenger traffic throughout the 1977 - 1985 period. Considering that the passenger volume grew from 9,048 in 1977 to 48,444 in 1985, it is obvious that Pan Am participated in a growth market.

United Airlines took over the operation of this market in 1986 and continued with a 100 percent market share of the nonstop passenger traffic.

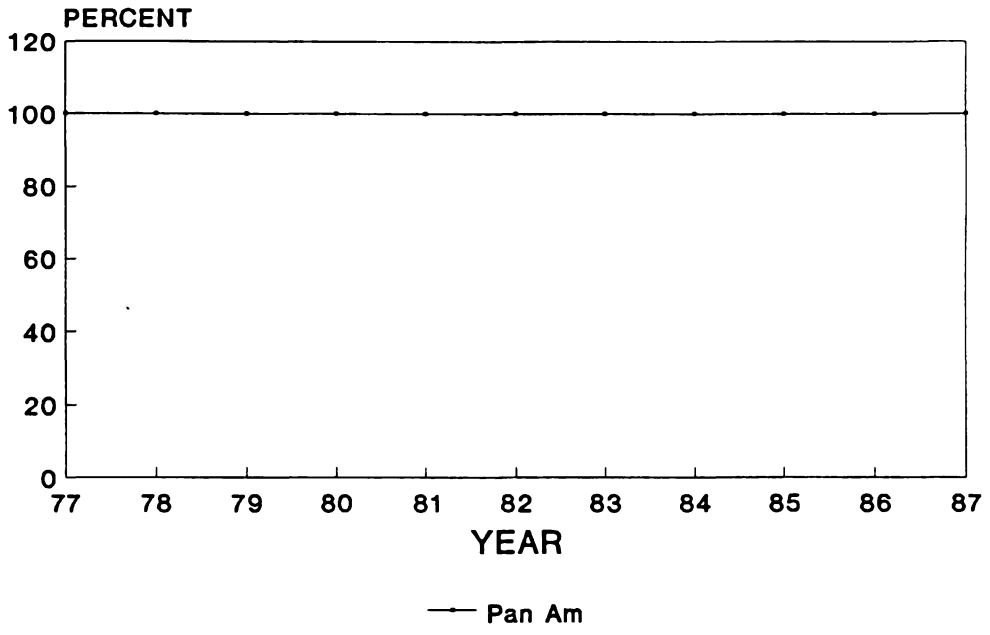
An analysis of the QSI reveals that Pan Am had the highest quality of air service (Figure 3.14). In 1977, it had a QSI of 7.51 which was the result of a total of 14 weekly flights. The reason for not achieving a higher QSI can be attributed to the fact that four of the 14 flights involved 3 stops while three flights even had four stops.

The QSI decreased to 5.55 because of reducing the number of flights to three which however were nonstop services. Singapore Airlines started serving the market in 1979 with a DC 10 flying four times a week and making two stops.

In 1979, Pan Am introduced seven nonstop flights which

FIGURE 3.13

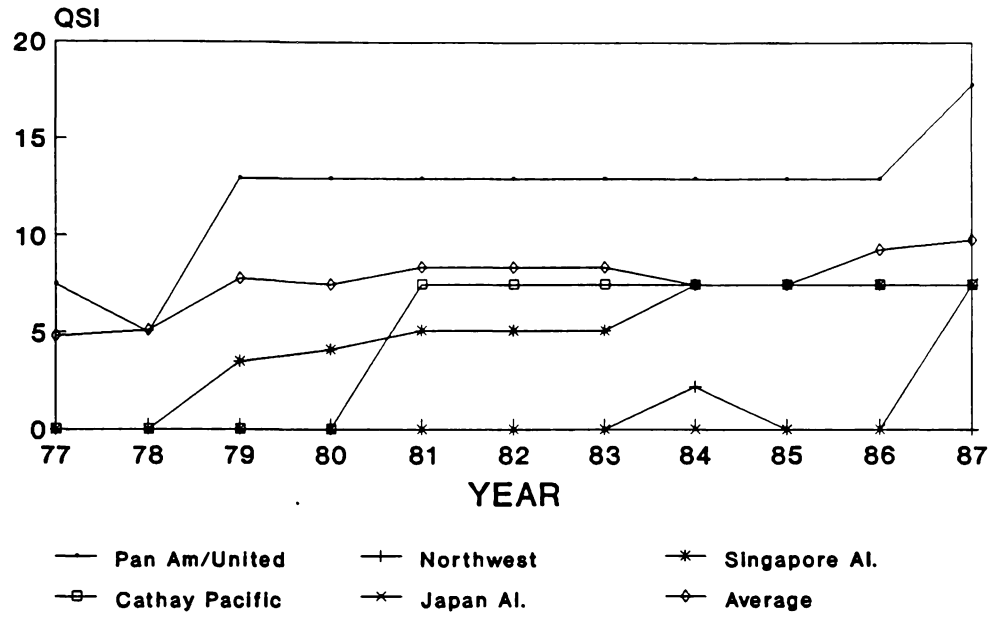
THE DEVELOPMENT OF MARKET SHARES IN THE SAN FRANCISCO - HONG KONG MARKET FROM 1977 TO 1987



SOURCE: Calculations based on Traffic by Flight Stage, 1977-1987.

FIGURE 3.14

THE DEVELOPMENT OF THE QUALITY OF SERVICE INDEX IN THE SAN FRANCISCO - HONG KONG MARKET FROM 1977 TO 1987



SOURCE: Calculations based on OAG, Worldwide Edition, July, 1977-1987.

resulted in an increase of the QSI t 12.95, thereby bringing the service quality above the QSI average of 7.68. Pan Am did not alter this frequency until 1985.

Singapore Airlines on the other hand changed its equipment and replaced its DC 10 with a B747 flying four flights a week with one stop. In 1984, Singapore stepped up the frequencies to seven a week resulting in an increase of the QSI to 7.12. Although Singapore Airlines performed below the QSI average until 1984, it must be pointed out that it continuously increased its quality throughout the entire study period.

In 1981, Japan Airlines began offering services between San Francisco and Hong Kong. From the very beginning, Japan Airlines had a relatively high QSI of 7.12 due to its seven weekly flights making one stop.

The flag carrier of Hong Kong - Cathay Pacific entered the San Francisco - Hong Kong market in 1987. It offered seven B747 weekly flights making one intermediate stop in Vancouver, Canada. Correspondingly, its QSI was 7.12, a relatively high value considering that 1987 was the first year of operation for Cathay Pacific.

Although a total of four carriers offered services on this route, only Pan Am (later United Airlines) flew nonstop flights during the entire study period. Despite the availability of long-range aircraft, competing carriers like Singapore Airlines, Japan Airlines, and Cathay Pacific

decided to make at least one enroute stop on their way to Hong Kong.

Several reasons could be responsible for this. First, due to payload/range considerations, a techncial stop in Honolulu is still neceassary.

Second, the low traffic volume does not justify a non-stop service between the two cities. In particular the deployment of B747 equipment on this route might make "fill -up" stops necessary.

Third, Hong Kong is served as an extension of another high-yield city pair market. For example, many airlines offer flights from San Francisco to Hong Kong via Tokyo because they can realize a much higher yield on their flights to Tokyo.

The average QSI improved over the study period due to an increase in flight frequencies of airlines like Singapore Airlines and United Airlines.

Singapore Airlines' QSI steadily increased and might have been also part of a strategy to capture a larger proportion of the passengers traveling on US flag carriers. From 1979 to 1987, the share of US carriers was above 80 perent in this market.

Honolulu - Sydney

The Australian flag carrier Qantas (QT) was the only one offering nonstop services between Honolulu and Sydney

in 1977. Figure 3.15 reveals that it accounted for a 100 percent market share. This dominance diminished in 1980 when Pan Am began offering nonstop flights and captured a share of around 15 percent.

In 1981, Continental Airlines was added to the market which further contributed to Qantas' declining share. Both Pan Am and Continental continued building up their market shares at the cost of Qantas. In 1982, Pan Am had a 30 percent share which was its highest within the 1977-1985 period. Qantas with roughly 60 percent had its lowest share.

The only airline which steadily built up its passenger market share was Continental which gained a share of 17 percent in 1985. Figure 3.15 shows that Continental's gains were made at the cost of Pan Am which started losing share from 1982 onwards.

The role of Canadian Pacific in the Honolulu - Sydney market was rather small since it captured only marginal shares over the years.

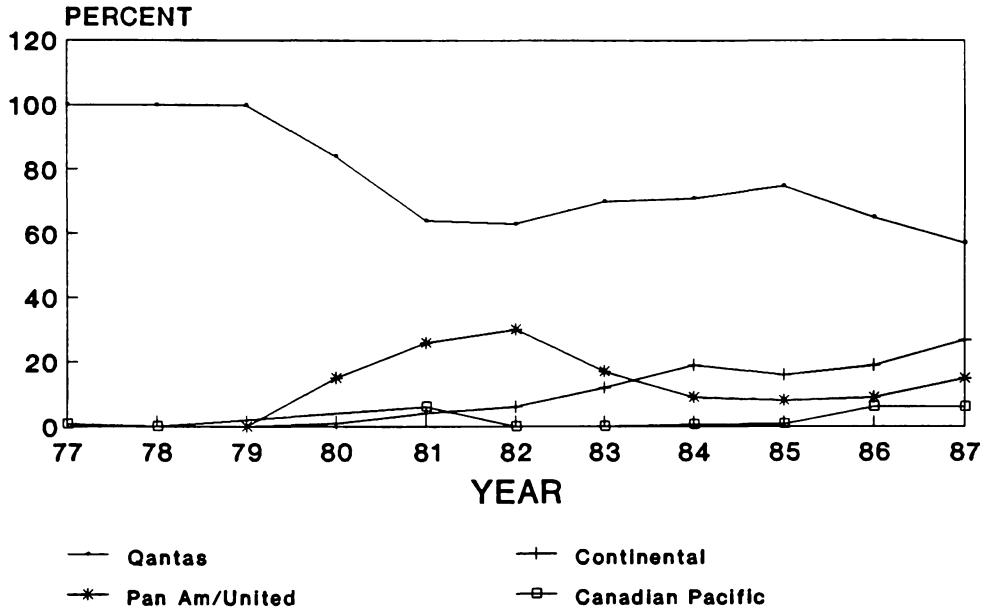
United Airlines, when starting offering services between Honolulu and Sydney built up its market share and carried around 12 and 17 percent in 1986 and 1987, respectively.

Qantas continued losing market shares mainly to Pan Am and Continental.

Qantas had the highest QSI in the entire period. Figure 3.16 indicates that starting with 8.6 in 1977, Qantas continuously increased its QSI and had 11.1 in 1978 and

FIGURE 3.15

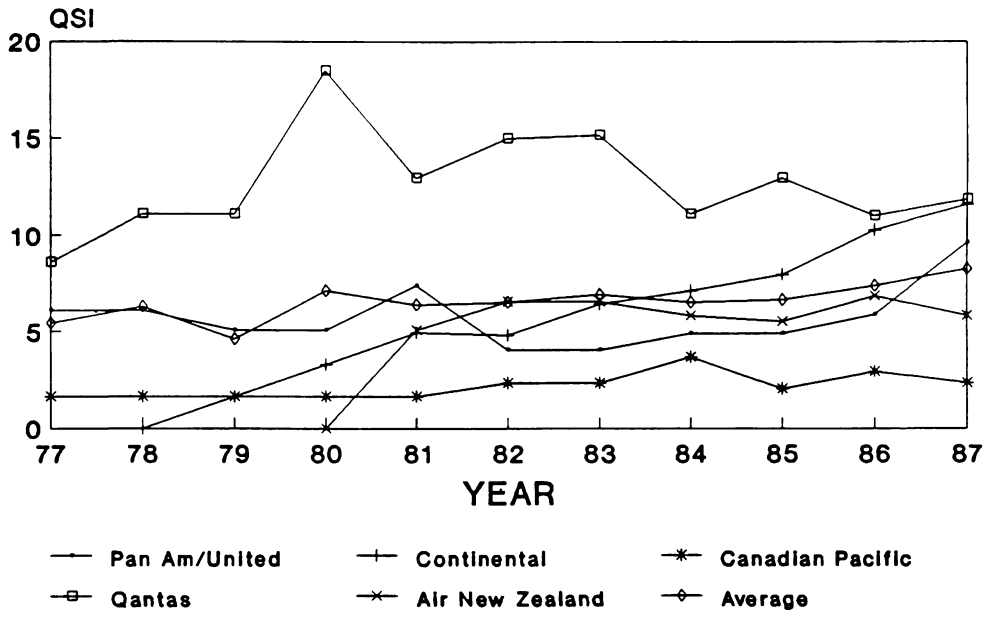
THE DEVELOPMENT OF MARKET SHARES IN THE HONOLULU - SYDNEY MARKET FROM 1977 TO 1987



SOURCE: Calculations based on Traffic by Flight Stage, 1977-1987.

FIGURE 3.16

THE DEVELOPMENT OF THE QUALITY OF SERVICE INDEX IN THE HONOLULU - SYDNEY MARKET FROM 1977 TO 1987



SOURCE: Calculations based on OAG, Worldwide Edition, July, 1977-1987.

18.5 in 1980. All Qantas flights were nonstop and were performed with B747 equipment so that a change in the QSI stemmed from increasing the flight frequency.

In 1980, Qantas had 10 weekly flights between Honolulu and Sydney. In 1981, it curtailed the number of weekly flights to seven most likely as a response to a decline in passenger volume in the wake of the 1980 recession.

The airline with the second highest QSI continuously changed. While Pan Am was second from 1977 to 1981 - primarily as a result of its high number of weekly flights - Air New Zealand (TE) took over the role as the second highest QSI airline in 1982 when its QSI increased to 6.57 which was equal to the average QSI that year. Air New Zealand offered a total of seven flights with five flights making one stop and the remaining two flights making two stops on their way to Sydney. Nevertheless, Continental increased its QSI by stepping up the number of weekly DC 10 flights and accounted for the second highest QSI in both 1984 and 1985.

Canadian Pacific had the lowest QSI because of its low frequency. From 1977 to 1985, Canadian Pacific increased its QSI from 1.65 to 2.04.

After starting flying to Sydney in 1986, United Airlines increased the number of flight frequencies and reduced the number of intermediate stops thereby having a QSI of 9.62 which was above the average QSI of 8.24.

A unique characteristics of this city pair market is its fast growth in passenger volume which almost quadrupled within four years from 44,886 passengers in 1977 to 153,078 passengers in 1981. Correspondingly, the number of carriers attracted to Honolulu - Sydney went up. While Qantas was the only airline flying this route on a nonstop basis in 1977, there was a total of four airlines offering their nonstop services in 1981.

The number of carriers remained unchanged for the rest of the time frame studied which is an indication of the restrictive bilateral agreement between the USA and Australia.

The passenger growth in 1980 and 1981 was absorbed by the new market entrants which suggests that they had a higher quality of service and/or were more aggressive in their fare pricing than Qantas.

Fare pricing on routes to Australia is a particularly important factor in an airline's marketing mix when taking into account that price sensitive US leisure travelers are largely responsible for the traffic growth.

The relatively high proportion of leisure travelers makes this market also more responsive to fluctuations in the state of the world economy. Considering that disposable income during a recession shrinks and people could less afford to travel overseas for vacation purposes, the number of passengers traveling to Sydney declined from

153,078 in 1981 to 118,540 and 93,954 in 1982 and 1983, respectively.

During these two years, however, Continental was able to carry a larger number of passengers and therefore built up its market share.

In 1984, the market recovered and the passenger volume went up. Qantas this time participated in the market growth and carried a larger number of passengers. Nevertheless, the fact that it continued losing market shares until 1987 is a clear sign of fare aggressive competitors.

Los Angeles - Sydney

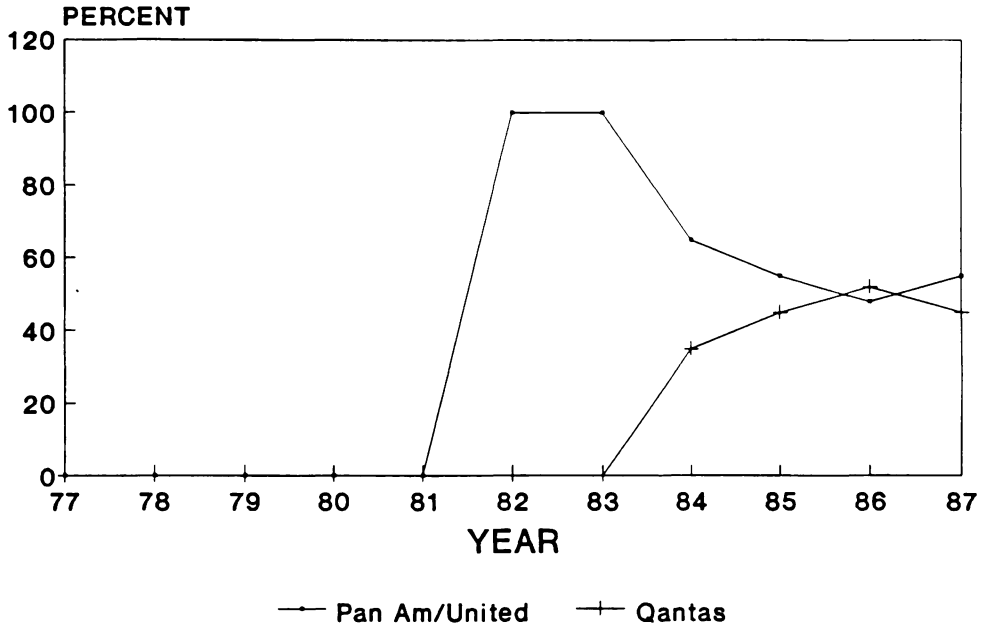
The Los Angeles -Sydney market was served by the two nonstop carriers Pan Am and Qantas. These services, however, did not start until 1982. Pan Am as shown in Figure 3.17 held 100 percent of the nonstop passenger market until 1984 when Qantas inaugurated nonstop flights. Pan Am lost around 40 percent of the market to Qantas which continued building up its share. In 1985, both carriers almost equally shared the market.

In 1986, United Airlines started serving its operation in this market. Although it continued losing passengers to Qantas during that year, United Airlines regained market share and claimed around 50 percent of the market.

The QSI of Pan Am was one of the highest among all

FIGURE 3.17

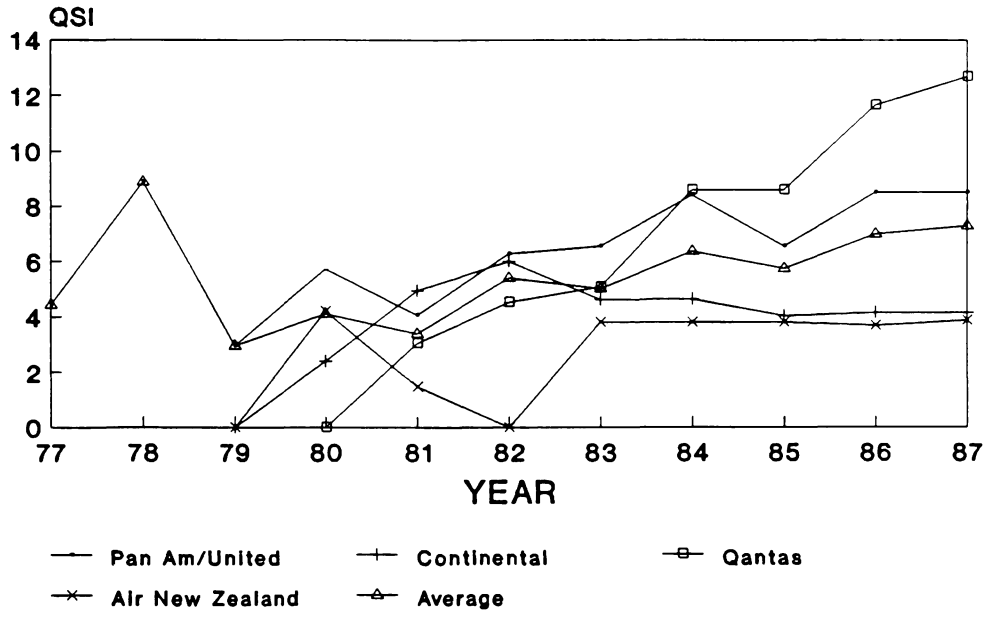
THE DEVELOPMENT OF MARKET SHARES IN THE LOS ANGELES - SYDNEY MARKET FROM 1977 TO 1987



SOURCE: Calculations based on Traffic by Flight Stage, 1977-1987.

FIGURE 3.18

THE DEVELOPMENT OF THE QUALITY SERVICE INDEX IN THE LOS ANGELES - SYDNEY MARKET FROM 1977 TO 1987



SOURCE: Calculations based on OAG, Worldwide Edition, July, 1977-1987.

airlines serving this market. Beginning with 4.44 in 1977, Pan Am built up its QSI to a high of 8.42 in 1984. During that period, Pan Am was topped once by Continental which had a QSI of 4.95 in 1981 (versus 4.07 of Pan Am).

Qantas did not serve the market until 1981 and had a QSI of 3.05 that year. This QSI was increased through the introduction of more flights. In 1983, Qantas had five one stop flights to Sydney which was the equivalent to a QSI of 5.08. The growth in the QSI of Qantas in 1984 and 1985 was the result of having a total of six flights of which three were nonstop services. Due to an increase in the weekly flight frequency, Qantas' QSI grew further and achieved 11.66 and 12.68 in 1986 and 1987, respectively.

Continental also increased its QSI which was 2.4 in 1980 and 6 in 1982. Again, responsible for this was the increase in the number of weekly flights combined with a reduction in the number of enroute stops. From 1983 to 1987, Continental`s QSI stabilized around a value of 4.

Air New Zealand's QSI showed a rather volatile picture due to a change in aircraft equipment, the number of weekly frequencies, and the number of stops. It had a QSI of 4.2 in 1980, 1.48 in 1981, 0 in 1982, and a high of 5.18 in 1983.

The development of nonstop services on the Los Angeles - Sydney route was a question of having adequate long range equipment with a sufficient enough payload capability.

Although the B747 SP was available in the mid 1970s, Pan Am and Qantas did not start utilizing this aircraft type on this route until 1982 and 1983, respectively. Possible explanation could be that both carriers did not think that there would be a high demand for this service.

However, with the addition of Continental to this city pair market, both Pan Am and Qantas might have been forced to distinguish their services from that of Continental.

The growth from 756 passengers in 1982 to 63,286 passengers in 1987 exhibits the success of the nonstop services.

This success must be put into perspective since carriers Continental and Canadian Pacific route their flights through Honolulu to make a fuel stop and still increase their market share.

The Sale of the Pan Am Pacific Division to United Airlines in 1985

The announcement of the sale of Pan Am's Pacific division to United Airlines on April 22, 1985, constituted the climax of Pan Am's assets sale in the 1980s. The asset sale began with the liquidation of the New York headquarters (Pan Am Building) for $294 million in 1980 which was followed by the sale of the InterContinental Hotel chain for $222 million in 1981. Eventually, after obtaining approval by the Department of Transportation (DOT) on December 2, 1985, Pan Am handed over all Pacific routes and related assets to United Airlines in February 1986.

Specifically, this transaction included the transfer of Pacific route authorities (Figure 3.19) contained in three certificates (6), the purchase of four B747 SP, six L1011-500, and one DC 10, the acquisition of seven B747 SP leased by Pan Am from various sources, the purchase of an L1011 flight simulator, spare engines and spare parts for the abovementioned aircraft types, and other ground assets and real property in the Pacific except for Hawaii (7). United agreed on hiring the approximately 2,700 employees who were needed to continue Pan Am's Pacific operation.

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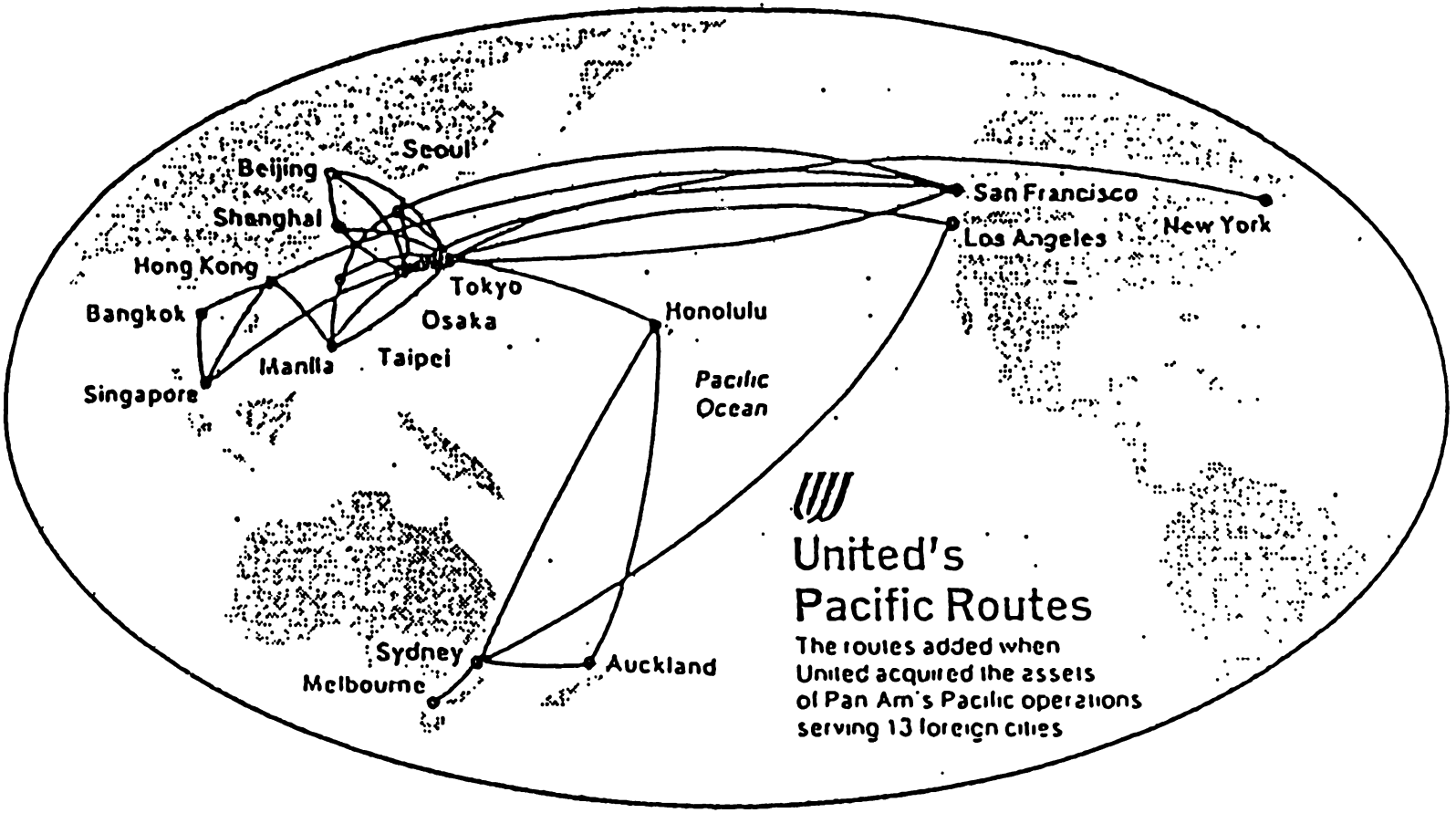
(6) The certificates include that for route 115, authorizing service to specified points in the South Pacific; for route 130 authorizing service to the Pacific and Asia; and for route 246 authorizing service between the New York/Los Angeles, Los Angeles/San Francisco/Honolulu and the People's Republic of China.
(7) Pacific Transfer Case, 14,668-14,669.

FIGURE 3.19

UNITED AIRLINES' PACIFIC NETWORK WHEN TAKEN OVER FROM PAN AM IN 1986



SOURCE: "United Flies Into Trouble In Pacific", International Herald Tribune, 19 February 1987.

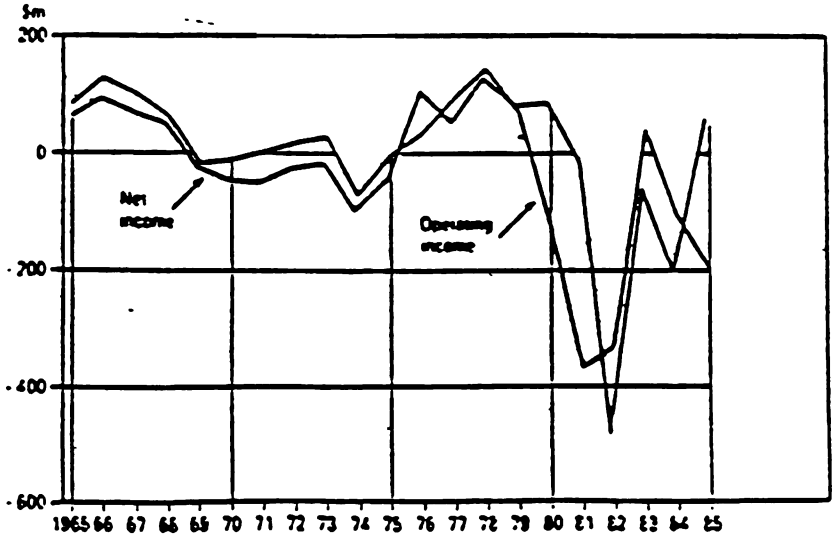
This figure included 410 pilots and qualified flight engineers, 1202 flight attendants, 100 supervisory and management employees, and all of Pan Am's non-US payroll ground employees. The value of this transaction was a total of some $750 million.

The objective of selling assets was to raise cash so that Pan Am could continue as a going concern. Figure 3.20 gives an indication of the financial situation Pan Am experienced from 1966 to 1985.

As of December 31, 1984, Pan Am had long-term debt of over $1.2 billion and a debt-equity ratio of 5.5:1 (8).

FIGURE 3.20

PAN AM'S OPERATING INCOME (AIRLINE) AND NET INCOME (CORPORATION) FROM 1966 TO 1985



SOURCE: "Deep rooted causes for current crisis", Lloyd's Aviation Economist (June 1986), 27.

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(8) "Deep rooted causes for current crisis", 28.

The following factors contributed to Pan Am's strong need for raising cash.

First, Pan Am was subject to unfavorable government regulation and to increasing competition. Until domestic deregulation in 1978, Pan Am was denied access to domestic routes. Also, many years ago, Pan Am was denied the status as the only international US flag carrier. US international routes were served by a growing number of US domestic carriers which had the advantage of feeding their own flights.

Second, the two fuel oil crises in 1973 and 1979 hurt Pan Am more than other carriers because it purchased most of its fuel overseas.

Third, when the US dollar was high, Pan Am suffered from severe exchange losses while when the US dollar was low, US travel abroad declined.

Fourth, Pan Am exercised bad timing decisions such as ordering the B747 when demand on transatlantic routes slackened, merging with National Airlines just when domestic route authority ceased to have any value, and, finally, selling its Pacific network and focusing on transatlantic services when international terrorism devastated US travel overseas (9).

United Airlines benefited from the acquisition of the Pan Am Pacific Division in several ways.

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(9)Ibid., 29.

First, considering that it took United Airlines some 16 years to obtain transpacific routes (in 1983, it was allowed to fly from Seattle/Portland to Hong Kong and Tokyo), the acquisition secured a much faster access to multiple countries in a region which is the world's fastest growing airline market.

Second, United Airlines quickly realized that its growth opportunities were rather limited because of restrictions on its operating authorities. Under the then existing bilateral agreement between the USA and Japan, for example, only the three carriers Pan Am, Northwest, and Japan Airlines were free of tight regulatory restrictions with respect to market entry and capacity expansion (10).

By acquiring the Pan Am Pacific Division, United Airlines secured itself a higher degree of operational freedom which would allow it to maintain and expand its competitive position in the Asia/Pacific region.

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(10) Pacific Transfer Case, 14,675.

United Airlines' Performance in Selected Transpacific Markets Since the Takeover of the Pan Am Pacific Division in 1985

Market Share Analysis

This section compares the performance of Pan Am in selected international transpacific markets with that of United Airlines.

An analysis of the nine selected transpacific markets as of 1985 (Pan Am's last year of international transpacific operations) and 1987 (United Airlines' first full year of transpacific operations) reveals that United Airlines' market shares marginally increased in six city pair markets, remained unchanged in one market, and declined in two markets (Table 3.4, Table 3.5, and Table 3.6).

TABLE 3.4

CITY PAIR MARKETS WITH GROWING UNITED AIRLINES MARKET SHARES

San Francisco - Tokyo

	1985		1987		
Carrier*	Passenger	Percent	Passenger	Percent	Change
PA/UA	72,436	29.0 %	99,158	34.0 %	+4.0 %
NW	62,402	25.0 %	81,705	28.0 %	+3.0 %
JL	111,026	44.6 %	110,358	38.9 %	-5.7 %
CA	NR	-	NR	-	-
Total**	249,963	100 %	291,221	100 %	+16.5 %

TABLE 3.4 - Continued

Chicago - Tokyo

	1985		1987		
Carrier*	Passenger	Percent	Passenger	Percent	Change
UA	0	0 %	2,314	2.1 %	+2.1 %
NW	79,622	100 %	74,096	66.8 %	-33.2 %
JL	0	0 %	34,704	31.3 %	+31.3 %
Total**	79,622	100 %	110,878	100 %	+39.3 %

Honolulu - Tokyo

	1985		1987		
Carrier*	Passenger	Percent	Passenger	Percent	Change
PA/UA	95,924	16.7 %	140,688	20.1 %	+3.4 %
NW	105,940	18.4 %	130,399	18.7 %	+0.3 %
JL	304,579	53.0 %	355,091	50.8 %	-2.2 %
KE	68,070	11.8 %	66,856	9.6 %	-2.2 %
MH	0	-	5,956	0.9 %	+0.9 %
CI	NR	-	NR	-	-
Total**	574,513	100 %	698,990	100 %	+21.6 %

Honolulu - Hong Kong

	1985		1987		
Carrier	Passenger	Percent	Passenger	Percent	Change
PA/UA	0	0 %	2,969	2.4 %	+2.4 %
SQ	114,294	100 %	118,263	97.6 %	-2.4 %
Total	114,294	100 %	121,232	100 % .	+6.0 %

Table 3.4 - Continued

Los Angeles - Sydney

	1985		1987		
Carrier*	Passenger	Percent	Passenger	Percent	Change
PA/UA	21,010	48.6 %	32,102	51 %	+2.1 %
QT	22,193	51.4 %	32,134	51 %	0 %
Total**	43,203	100 %	63,286	100 %	+46.5 %

Honolulu - Sydney

	1985		1987		
Carrier*	Passenger	Percent	Passenger	Percent	Change
PA/UA	8,711	8.2 %	27,637	15.2 %	+7.0 %
CO	16,449	15.5 %	49,789	27.6 %	+12.1 %
CP	870	0.8 %	10,706	5.9 %	+5.1 %
QT	80,044	75.4 %	92,534	51.2 %	-24.2 %
Total**	106,074	100 %	180,666	100 %	+70.3 %

* Key for carrier abbreviations:

CA = Civil Aviation Administration of China (People's Republic)
CI = China Airlines (Taiwan)
CO = Continental
CP = Canadian Pacific
JL = Japan Airlines
KE = Korean Air
MH = Malaysian Airline System
NW = Northwest Airlines
PA = Pan Am
QT = Qantas
SQ = Singapore Airlines
UA = United Airlines

** Total does not equal 100 % due to rounding.

NR = Not reported by carrier.

SOURCE: Calculations based on Traffic by Flight Stage, 1985 and 1987.

Table 3.5

CITY PAIR MARKETS WITH UNCHANGING
UNITED AIRLINES MARKET SHARES

San Francisco - Hong Kong

	1985		1987		
Carrier*	Passenger	Percent	Passenger	Percent	Change
PA/UA	48,444	100 %	45,863	100 %	0 %
Total	48,444	100 %	45,863	100 %	-

* Key for carrier abbreviations:

PA = Pan Am
UA = United Airlines

SOURCE: Calculations based on Traffic by Flight Stage, 1985 and 1987.

Table 3.6

CITY PAIR MARKETS WITH DECLINING
UNITED AIRLINES MARKET SHARES

New York - Tokyo

	1985		1987		
Carrier*	Passenger	Percent	Passenger	Percent	Change
PA/UA	95,000	45.0 %	80,092	32.0 %	-13.0 %
NW	43,528	20.6 %	75,332	30.0 %	+10.0 %
JL	73,029	34.5 %	94,596	37.8 %	+3.3 %
CI	NR	-	NR	-	-
Total**	211,55	100 %	250,020	100 %	+18.2 %

Los Angeles - Tokyo

	1985		1987		
Carrier*	Passenger	Percent	Passenger	Percent	Change
PA/UA	78,344	18.7 %	68,210	13.9 %	-4.8 %
NW	104,109	24.8 %	118,082	24.1 %	-0.7 %
JL	161,763	38.5 %	173,621	35.4 %	-3.1 %
SQ	52,601	12.5 %	83,016	16.9 %	+4.4 %
RG	23,155	5.5 %	23,403	4.9 %	-0.6 %
MH	0	0 %	23,836	4.9 %	+4.9 %
NH	NR	-	NR	-	-
KE	NR	-	NR	-	-
Total**	419,972	100 %	490,186	100 %	+16.7 %

* Key for carrier abbreviations:

CI = China Airlines
JL = Japan Airlines
KE = Korean Air
MH = Malaysian Airline System
NH = All Nippon Airways
NW = Northwest Airlines
PA = Pan Am
RG = Varig
SQ = Singapore Airlines
UA = United Airlines

** Total does not equal 100 % due to rounding.

NR = Not reported by carrier.

SOURCE: Calculations based on Traffic by Flight Stage, 1985 and 1987.

Table 3.4 shows that United Airlines improved its market shares in the Honolulu - Sydney, San Francisco - Tokyo, Honolulu - Tokyo, Honolulu - Hong Kong, Chicago - Tokyo, and Los Angeles - Tokyo market. Market share increases ranged between 2 and 7 percent and indicated marginal gains by United Airlines.

The largest passenger market share increase of United Airlines occurred in the Honolulu - Sydney market. When compared with Pan Am's market of 8.2 percent in 1985, United improved its market share by 7 percentage points to 15.2 percent.

However, when compared with competing airlines like Continental which captured an additional 12 percent, United Airlines' gain seemed modest. Partially responsible for United Airlines' increase was certainly the growth trend in passenger traffic in this market.

Within only 2 years, the number of passengers flying between Honolulu and Sydney grew by around 75,000 passengers which was equivalent to a 70 percent increase. This impressive growth, as discussed in Chapter II, was mostly the result of Australia's increasing popularity as a tourist destination among US leisure travelers.

The growth of market shares of US/Canadian carriers occurred at the expense of Qantas which posted a decrease of 24 percent. Considering Honolulu's lack of importance as a commercial/industrial center and small population base of

1.2 million, it must be emphasized, that the passenger volume growth was partially a reflection of airlines' decision to route more flights from the US mainland through Honolulu. The actual passenger growth therefore probably took place in other US cities.

The increase in the San Francisco - Tokyo market was 4 percent and the second largest gain in all markets analyzed. This proved that United Airlines' efforts to develop San Francisco as a major transpacific hub paid off. During 1986, United Airlines improved facilities at that airport and also increased the number of daily flights from 123 to 145 so that international transpacific passengers would have better connections (11).
The increase in frequency share on routes between San Francisco and other US domestic points probably contributed the most to United Airlines' passenger share increase in the San Francisco - Tokyo market and could be a side-effect of the S-curve relationship between market share and frequency share.

The S-curve relationship is a phenomenon which was found in the late 1960s by several airline analysts including N. Taneja and D. Bibault (12). It states that on a competitive route served by two carriers, an airline in a minority position (e.g. that of providing 30 percent

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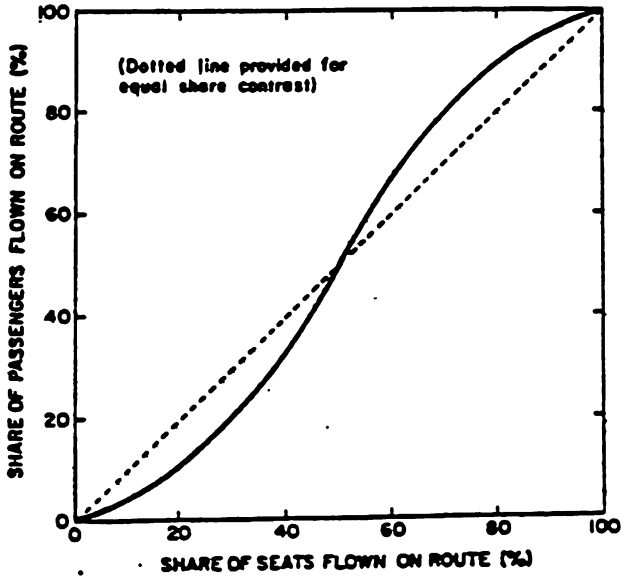
(11)"United Airlines Annual Report 1986", 21
(12)William E.Fruehan, Jr.,The Fight for Competitive Advantage(Boston:Harvard University, 1972), 127.

of the available flights on the route) will often get a substantially smaller share of the total passengers flown on the route (e.g. little more than 20 percent). The carrier offering 70 percent of the flights and therefore being in the majority position will obtain a disproportionally higher passenger share of 80 percent or more (Figure 3.21). Partially responsible for this imbalance is most likely the fact that travelers in search of a reservation prefer an airline offering departure times which are the closest to their times desired. It is reasonable to assume that passengers who begin their trip at some US interior point and, in order to catch a trans-

Figure 3.21

MARKET SHARE VERSUS FREQUENCY SHARE
ON A TWO-CARRIER ROUTE



Source: William E.Fruehan, Jr., The Fight for Competitive Advantage(Boston:Harvard University, 1972), 128.

pacific flight, have to transfer at a gateway airport, and want to spend the least amount of time possible at the transfer point (this is in true for business travelers who are usually more interested in the shortest total travel time than visiting friends and relatives and leisure travelers). A carrier with a higher frequency such as United Airlines which had a 20.8 percent frequency share at San Francisco (13) is, therefore, more likely to meet a passenger's time preference.

As pointed out earlier, the increase in United Airlines' passenger market share was only a marginal 4 percent and considering that Northwest was able to increase its share by 3 percent without going through the same efforts as United Airlines suggests the contribution of other factors to its share increase.

One aspect could involve pricing of passenger fares. Although United Airlines stated in 1986 that a low fare strategy would not be applied to Pacific routes between the USA and Japan but rather would focus on increasing capacity, it is known that airlines in this market buy volume business with rebates to travel agents and wholesalers who in turn sell cheap tickets (14). United Airlines might have applied this strategy to capture additional market share.

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(13)"United Airlines Fact Book 1988", 12.
(14)Carol Jouzaitis, "United works to make new Pacific routes pay",Journal of Commerce (March 1986).

In the Chicago - Tokyo market, United Airlines, after introducing nonstop flights, gained an initial market share of only 2 percent. This development is even more surprising when one takes into account that Chicago is United Airlines' main hub in the USA.

From Chicago, United Airlines offered 393 daily departures and carried some 30,000 passengers a day to almost 100 cities in 1987. Its frequency share was 38.1 percent versus 26.9 percent of American Airlines (15). The feeding potential for United Airlines'transpacific flights to Tokyo was, therefore, large and should have led to a higher market share of United Airlines in this market. It is interesting to note that a disproportionate share increase was actually obtained by Japan Airlines which claimed a share of 31 percent in 1987. A possible explanation for United Airlines' marginal share increase could be the fact that despite the enormous feeding capability at Chicago O'Hare Airport, United Airlines - in application of the S-curve relationship - did not offer a high enough frequency on the Chicago - Tokyo route to capture a substantial market share. However, even this statement has to be put into perspective when one takes into account that Japan Airlines which started services on this route like United Airlines in 1983 had always a lower frequency that United Airlines. In 1983, Japan Airlines

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(15)"United Airlines Fact Book 1988", 10.

offered three weekly flights versus seven of United Airlines. In 1987, Japan Airlines had four weekly flights versus seven of United Airlines. Reasons for Japan Airlines' gain could include the flag carrier loyalty of Asian travelers.

The emphasis on United Airlines' feeding and on-line capability, however, ignores that price is another important factor in choosing an airline for an international flight. In particular, the relatively price-elastic visiting friends and relatives, and leisure traveler who pays for the air fare himself tends to prefer an interlining flight if its fare price is lower than that for an on-line flight.

United Airlines' share decreased by 5 percentage points in the Los Angeles - Tokyo market. Although other carriers including Northwest and Japan Airlines lost market shares as well, United Airlines' decline was the largest among all 3 airlines. Taking into account United Airlines' lack of experience of serving international markets in the Asia/Pacific region, it most likely was extremely difficult for United Airlines to differentiate its service from that of the large number of competitors (7 of which 5 were Asian airlines) of which in particular Singapore Airlines, Malaysian Airline System, and All Nippon Airways were known for their aggressive fare pricing and high quality of service.

United Airlines' largest decline in passenger market

share took place in the New York - Tokyo market where it lost a market share of 13 percent. Gains were made by Northwest and Japan Airlines which captured 10 and 3 percent, respectively. An explanation of this development could not be the lower frequency of United Airlines in this market (while Pan Am offered eleven nonstop flights in 1985, United Airlines had seven nonstop flights and one one-stop flight in 1987) since United Airlines' competitor Northwest with the lowest frequency of seven flights gained the largest market share.

It is most likely that United Airlines' poor market share performance not only in this city pair market but also in other markets can be attributed to difficulties at United Airlines in delivering a quality of service expected by international transpacific passengers.

It must be kept in mind that United Airlines at the time of taking over the Pacific Division had very little experience as an international carrier since it served only a few destinations in Canada and Mexico. United Airlines' lack of experience to compete against international high quality service carriers from Asia probably resulted in losing passengers to competing carriers. The lack of acknowledging cultural differences of the various Asian countries and accommodating them in its service, for example, became clear on United Airlines'

inaugural flight from Hong Kong to the USA which carried mostly Chinese business travelers. First class flight attendants wore a white carnation for the flight - a well known Chinese symbol for bad luck (16).

Additionally, United Airlines incurred mechanical problems since the aircraft it acquired from Pan Am had more deferred maintenance that its entire own fleet. All engines of the L1011s and most aircraft floor had to be built. The mechanical problems resulted in flight delays and cancellations and were reflected in United Airlines' on-time performance (actual departures within 30 minutes of published departure time) which was only 30 percent (17).

On routes to Tokyo, for example, United Airlines, in the first months after the takeover of the Pacific Division, canceled around 10 percent of its flights compared with less than 1 percent for other carriers in that market (18). Flight delays and cancellations resulted in declining United Airlines market shares because it was required to book passengers on competing carriers. Simultaneously, United Airlines'tour business, the second most important passenger source after business travelers was also affected. Japan's tours are generally very short

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(16)Marl Lyon, "Rapid Capacity Growth On Pacific Routes Could Reduce Yield", Airlines Executive(January 1988), 26.
(17)"United Pacific Division Accomplishments 1987".
(18)"United Flies Into Trouble In Pacific",International Herald Tribuyne(Paris), 19 February 1987.

so that camcellations can severely disrupt them (19).

Mechanical problems were obviously not the only source of flight delays and cancellations. United Airlines also had trouble figuring out the right mix of passenger, cargo, and fuel load. As a result, nonstop flight from Los Angeles to Sydney, for example, ended up landing in Fiji to refuel (20).

Finally, United Airlines' approach to managing the Pacific Division might have also contributed to decreasing market shares. United Airlines was run by a centralized staff in Chicago. Thus, its cockpit, maintenance, and base crews were not used to operating in the Pacific where communication between headquarters and outlying airports is difficult and aircraft captains often make major decisions themselves. Whereas Pan Am crews became used to flying with a number of maintenance problems which were not safety related and therefore were deferred, United Airlines crews were used to having the repairs made overnight (21). Also, the Japanese staff of United Airlines could not make its own decisions with respect to fare discounting, a complex system in the Asia/Pacific region. Business in most cases had to be delayed until management in Chicago could act (22).

Taking the above-described deficiencies into account,

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(19)Ibid.
(20)Ibid.
(21)Ibid.
(22)Ibid.

it is not too surprising that United Airlines did not report an operating profit on its Pacific Division (it is estimated that United had a $100 million loss) (23) and performed relatively poorly in the nine city pair markets analyzed.

In 1987, United Airlines embarked on a major service improvement program aimed at regaining lost passenger market share. Part of this program was the training of flight attendants with an emphasis on cultural sensitivities and a more professional approach when delivering inflight service. Further improvements of the inflight service included the addition of one flight attendant to the business class, the change of food entrees every 60 days, the provision of inflight currency exchange service, the placement of Chinese, Japanese, and Korean translators on board, and the total redecoration of the cabin interior.

The improvement of the ground service included the introduction of a concierge service. The concierges assist VIP and first class passengers in 13 international airports and five US gateways in special needs such as hotel/dinner reservations or in processing through customs and immigration (24).

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(23)Richard Whitaker, "United We Stand?",Airline Business (July 1987), 25.
(24)"United Pacific Division Accomplishment 1987".

The Impact of the Pacific Division Transfer on the Quality of Air Service on Transpacific Flights

Most discussions dealing with the large scale entrance of United Airlines in former Pan Am transpacific markets focus on the impact of its domestic network and APOLLO CRS on the competitive environment. According to the researcher's knowledge, there is no public study which evaluated the implications of United Airlines' market entrance in terms of quality of air service.

In its evaluation of the Pacific Division Transfer, the US DOT briefly mentioned that service in terms of on-line service would improve as a result of United Airlines' domestic network (25). In 1986, when United Airlines operationally took over the Pacific Division from Pan Am, it contended that it would offer "a high quality product which is distinguishable from that of other Asian competitors but competitive" (26). United Airlines was keen to promote the image of a "quality airline with a quality product" and further stated that "it would not copy another carrier's product but offer an authentical American product" (27).

The aforementioned quotations indicate that the concept of quality is rather vague and needs some further

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(25)"Pacific Division Transfer Case", 14,673.
(26)"US Carrier will in wenigen Jahren Nummer 1 auf Transpazifik werden[US carrier wants to be number one on transpacific in a few years], Handelsblatt (Duesseldorf), 22 April 1986.
(27)"United targets growth in South Pacific",Journal of Commerce (June 1986).

explanation. In order to determine the quality of a product or service, quality has to be defined operationally. The variety of factors one could consider for evaluating an airline product was already introduced in the method section of this chapter and suggests that quality, as Max Wernet, head of the Strategic Planning Department at Lufthansa Airlines puts it, "is always relative and subjective for the customer. He [the customer] compares the product offered with others and evaluates its quality according to a subjective benefit"(28). The researcher has used the CAB's QSI as a measure of quality.

It is conventional wisdom to assume that a company's market share increases as the quality of its products improves because higher quality delivers higher satisfaction to the consumer. In the context of this study, one would expect an increasing passenger market share of a transpacific airline which improves its QSI.

An analysis of the QSI reveals that the QSI of United Airlines from 1985 to 1987 increased in four markets, remained unchanged in three markets, and declined in two markets (Table 3.7, Table 3.8, and Table 3.9).

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(28)Max Wernet, "Qualitaet im Luftverkehr - Bedeutungswandel durch Wettbewerb"[Quality in aviation - a change in meaning by competition],Lufthansa Yearbook 1988 (Cologne: Deutsche Lufthansa AG, 1988), 31.

Table 3.8

CITY PAIR MARKETS WITH A GROWING UNITED AIRLINES QUALITY SERVICE INDEX

SAN FRANCISCO - TOKYO

Carrier	1985	1987	Change
PanAm/United	12.95	23.45	+ 10.5
Northwest	12.95	12.95	0
Japan AL.	12.95	14.8	+ 1.85
China AL.	3.7	0	- 3.7

SAN FRANCISCO - HONG KONG

Carrier	1985	1987	Change
PanAm/United	12.95	16.0	+ 3.05
Continental	0.06	0	- 0.06
Singapore	7.12	7.12	0
Japan AL.	7.12	7.12	0
Cathay P.	0	7.12	+ 7.12

HONOLULU - HONG KONG

Carrier	1985	1987	Change
PanAm/United	0	7.12	+ 7.12
Northwest	3.05	0	- 3.05
Singapore	12.95	12.95	0

HONOLULU - SYDNEY

Carrier	1985	1987	Change
PanAm/United	4.9	9.62	+ 4.72
Continental	7.95	11.57	+ 3.62
Qantas	12.95	11.84	- 1.11
Canadian P.	2.04	2.33	+ 0.29
Air New Zealand	5.55	5.83	+ 0.28

SOURCE: Calculation based on OAG, Worldwide Edition, July, 1985 and 1987.

TABLE 3.8

CITY PAIR MARKETS WITH A STABLE UNITED AIRLINES QUALITY SERVICE INDEX

Chicago - Tokyo

Carrier	1985	1987	Change
United	7.12	7.12	0
Northwest	12.95	12.95	0
Japan AL.	3.05	7.4	+ 4.35

LOS ANGELES - TOKYO

Carrier	1985	1987	Change
PanAm/United	12.95	12.95	0
Northwest	12.95	18.5	+ 5.55
Japan AL.	22.2	20.35	- 1.85
Korean	2.04	4.07	+ 2.03
Varig	0	5.55	+ 5.55
Singapore	9.25	12.95	+ 3.7
Malaysian	0	7.4	+ 7.4

HONOLULU - TOKYO

Carrier	1985	1987	Change
PanAm/United	12.95	12.95	0
Northwest	12.95	16.65	+ 3.7
Japan AL.	29.6	31.45	+ 1.85
Korean	7.4	7.4	0
China AL.	3.7	9.25	5.55

SOURCE: Calculations based on OAG, Worldwide Edition, July, 1985 and 1987.

TABLE 3.9

CITY PAIR MARKETS WITH DECLINING UNITED AIRLINES QUALITY SERVICE INDEX

LOS ANGELES - SYDNEY

Carrier	1985	1987	Change
PanAm/United	8.79	8.51	- 0.28
Continental	4.05	7.12	+ 3.12
Qantas	8.6	12.67	+ 4.07
Air New Zealand	5.18	4.44	- 0.74

NEW YORK - TOKYO

Carrier	1985	1987	Change
PanAm/United	20.35	12.95	- 7.4
Northwest	12.95	12.95	0
Japan AL.	12.95	18.5	+ 5.55
CAAC*	0	1.85	+ 1.85

* Civil Aviation Administration of China (People's Republic).

SOURCE: Calculations based on OAG, Worldwide Edition, July, 1985 and 1987.

It is interesting to note that United Airlines' QSI improvements in some cases occurred in the same markets where it experienced market share increases. This was true for the Honolulu - Sydney, Honolulu - Hong Kong, and San Francisco - Tokyo market (Table 3.10). The only market with a QSI improvement but no corresponding market share increase was San Francisco - Hong Kong. Conversely, the New York - Tokyo market was the city pair market where United Airlines experienced the sharpest decline in both QSI value and passenger market share.

TABLE 3.10

CHANGES OF QUALITY OF AIR SERVICE AND MARKET SHARES IN SELECTED MARKETS FROM 1985 TO 1987

San Francisco - Tokyo

Carrier	QSI	Market Share
PanAm/United	+ 10.5	+ 4 %
Japan AL.	+ 1.85	- 6 %
Northwest	0	+ 3 %
China AL.	- 3.7	NR

New York - Tokyo

Carrier	QSI	Market Share
PanAm/United	- 7.4	- 13 %
Japan AL.	+ 5.5	+ 3 %
Northwest	0	+ 10 %
China AL.	+ 1.85	NR

Los Angeles - Tokyo

Carrier	QSI	Market Share
PanAm/United	0	- 5 %
Northwest	+ 5.55	- 1 %
Japan AL.	- 1.85	- 4 %
Korean	+ 2.03	NR
Varig	+ 5.55	- 1 %
Singapore	+ 3.7	- 4 %
Malaysian	+ 7.4	+ 5 %

SOURCE: Calculations based on OAG, Worldwide Edition, July, 1985 and 1987.

Although the data on United Airlines in both the San Francisco - Tokyo and Los Angeles - Tokyo markets seem to suggest a positive correlation between QSI and market share, an analysis of other carriers' data show a negative or even no correlation at all between QSI and market share. Northwest, for example, increased its market share by 10 percent although its QSI did not change. In the Los Angeles - Tokyo market, most carriers which increased their service quality experienced even a declining market share.

Figure 3.22 displays a scatter diagram where QSI and market share data of all carriers in all 9 markets for the 1977-1987 study period were plotted. The scatter diagram seems to suggest a positive correlation between QSI and market shares.

In order to determine the coefficient of correlation, the researcher applied a formula devised by Karl Pearson:

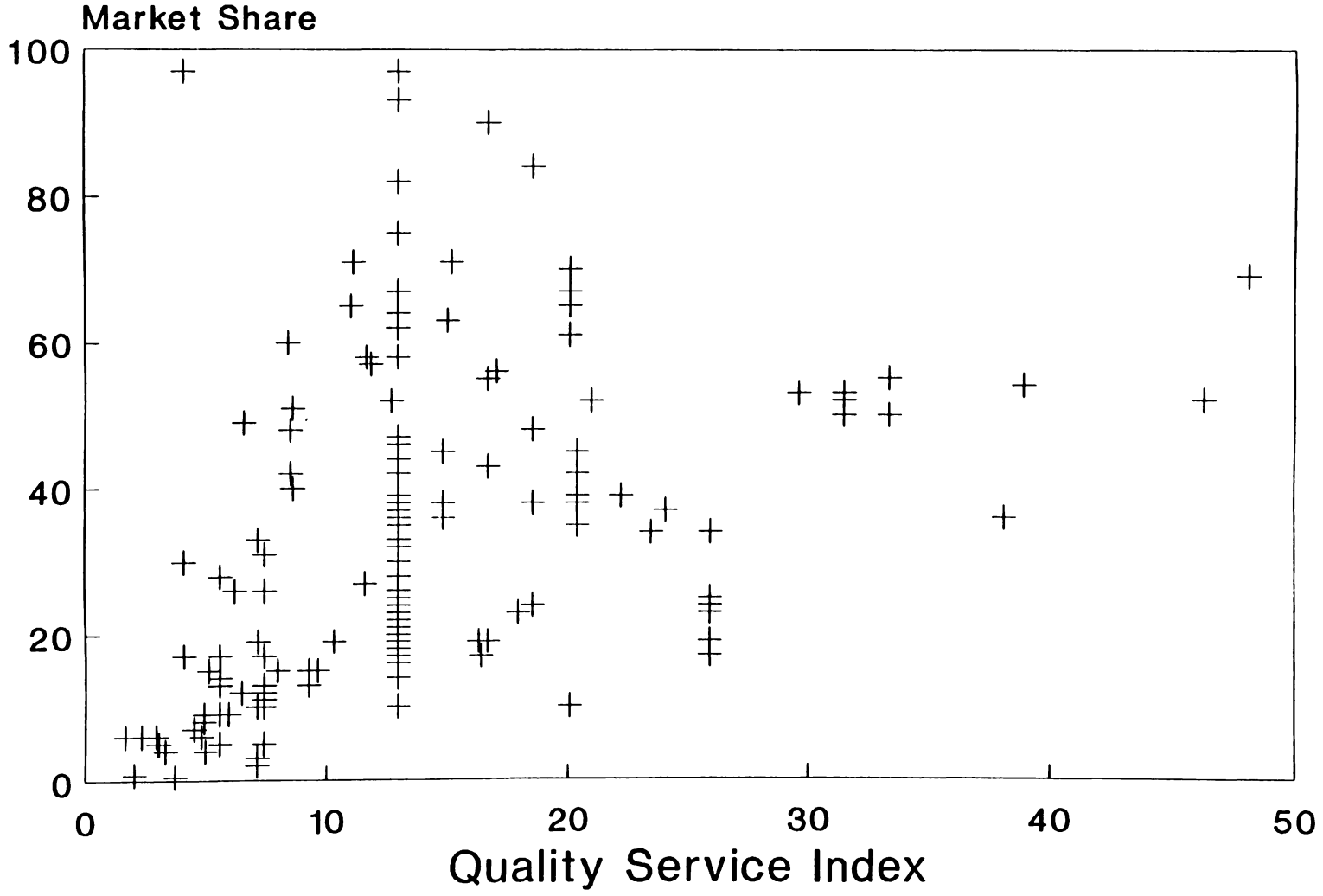
$$R = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{[N\Sigma X^2 - (\Sigma X)^2][N\Sigma Y^2 - (\Sigma Y)^2]}}$$

Since the interpretation of the correlation coefficient is not as precise as the interpretation of the coefficient of determination, the researcher also determined R^2 for the city pair markets analyzed.

The analysis showed that $R^2 = .20$ indicating that only 20 percent of the variation in market shares is explained by the linear relation with the QSI values. Considering

Figure 3.22

Quality Service Index versus market share in 9 transpacific markets (1977-1987)



SOURCE: Calculations based on "Traffic by Flight Stage", 1977-1987, and "US International Air Travel Statistics", 1977-1987.

that an R^2 of .60 to .90 is usually satisfactory in business studies, an R^2 = .20 displays a low degree of association between the 2 variables (29).

However, this result has to be put into perspective when one takes into account the various measurement limitations resulting from applying the QSI.

First, QSI and market share data measure different time frames. While the QSI was determined for the month of July only, market share values were computed on an annual basis. It is possible that the computations of an annual QSI might deliver a higher degree of correlation.

Second, another reason might be the inherent limitations of the QSI. It measures only the three parameters type of aircraft equipment, number of enroute stops, and weekly flight frequency and therefore neglects important variables which also influence the development of passenger market shares. These unmeasured variables could be important factors such as flag carrier loyalty, quality of in-flight service,and on-time performance. Flag carrier loyalty could be important since most of the transpacific routes analyzed have a high percentage of Asian travelers who prefer flying their home carrier.

Similarly important is the high quality of in-flight service which was largely responsible for the success of carrierrs like Singapore Airlines. On-time performance is

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(29)Howard Balsley,Basic Statistics for Business and Economics(Columbus, Ohio: Grid Inc., 1978), 395.

an important indictor of an airline's performance and severely affected United Airline's competitive position when starting its transpacific operations with an on-time performance of only 30 percent.

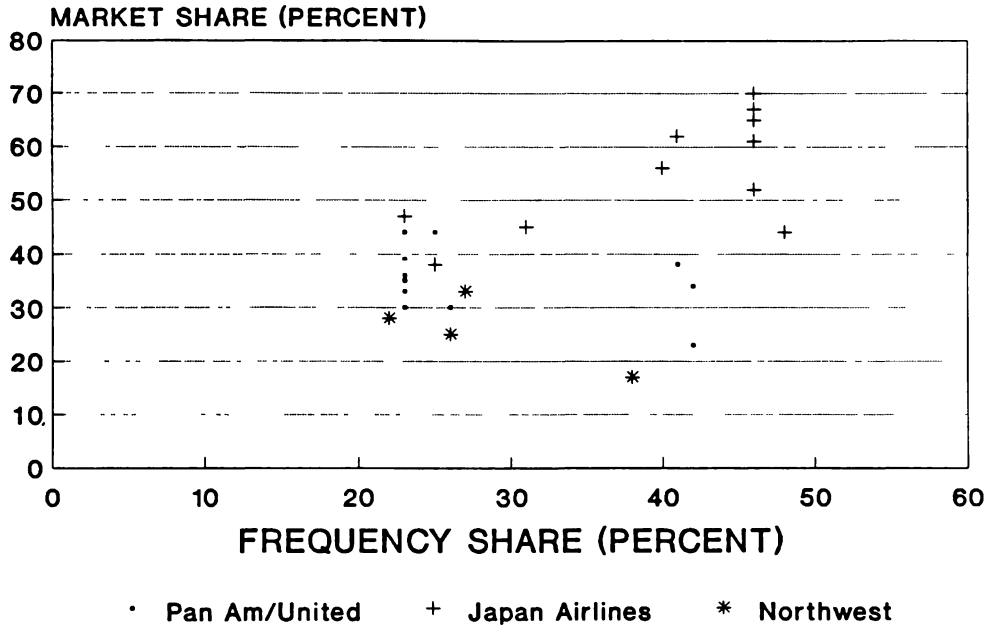
An analysis of a correlation between passenger market shares and one single parameter of the QSI - "weekly flight frequency" suggests that frequency is a main factor in influencing an airline's market shares. The coefficient of correlation was .78 and considered significant when tested at a $p = .05$ level. The coefficient of determination R^2 was .61 and indicated a higher degree of correlation than between market shares and QSI.

Figure 3.23, Figure 3.24, and Figure 3.25, seem to show that transpacific carriers' market shares increase more than proportionally with an increase in frequency shares. The New York - Tokyo market, however, also shows that frequency increases do not result in proportionally higher market shares which in turn might be a reflection of other important service variables by which an airline gains market share.

The following section investigates the impact of United Airlines on the QSI in nine city pair markets analyzed. The parameters used in determining the QSI from 1977 to 1987 were affected by factors such as general economic conditions, bilateral agreements, and advancement in aircraft technology. Although it is difficult to single

FIGURE 3.23

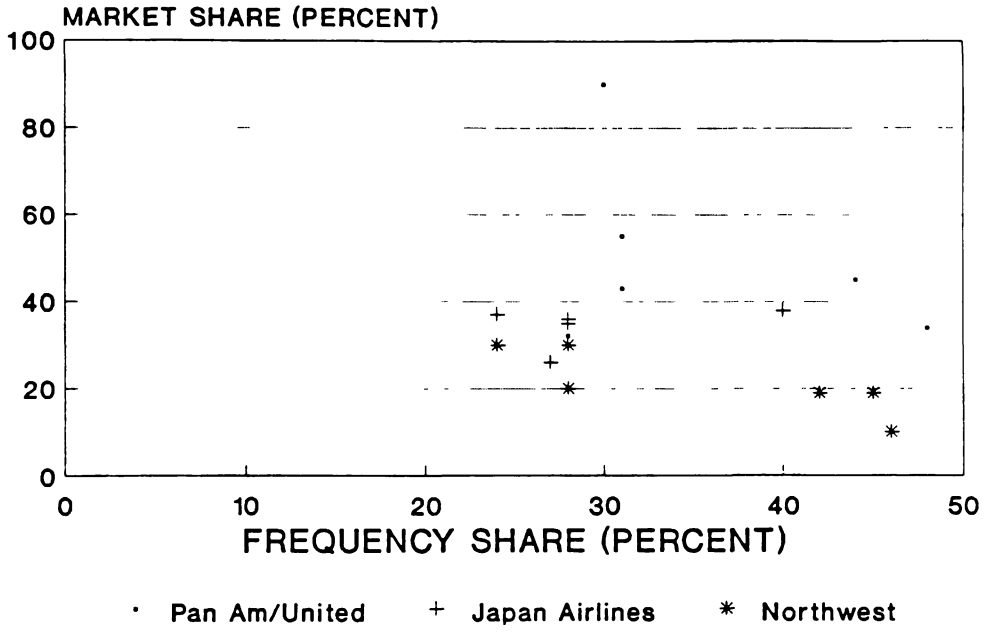
MARKET SHARE VERSUS FREQUENCY SHARE
IN THE SAN FRANCISCO - TOKYO MARKET



SOURCE: Calculations based on OAG, Worldwide Edition, July, 1977-1987, and Traffic by Flight Stage, 1977-1987.

FIGURE 3.24

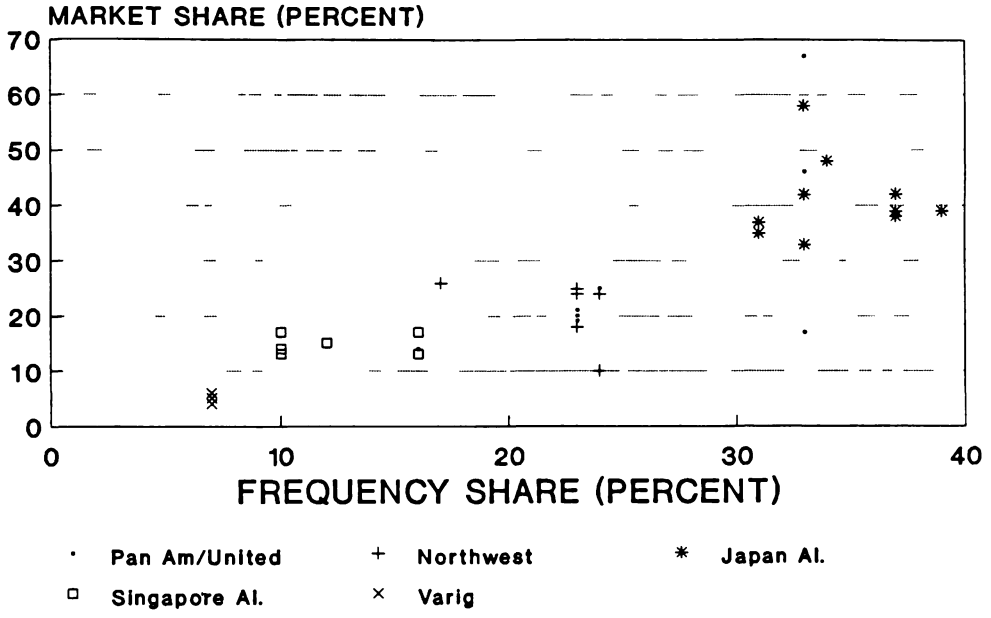
MARKET SHARE VERSUS FREQUENCY SHARE
IN THE NEW YORK - TOKYO MARKET



SOURCE: Calculations based on OAG, Worldwide Edition, July, 1977-1987, and Traffic by Flight Stage, 1977-1987.

FIGURE 3.25

MARKET SHARE VERSUS FREQUENCY SHARE
IN THE LOS ANGELES - TOKYO MARKET



SOURCE: Calculations based on OAG, Worldwide Edition, July, 1977-1987, and Traffic by Flight Stage, 1977-1987,

out the impact of United Airlines' market entrance, the researcher thinks that a comparison of the QSI value in the 1986-1987 interval with those in earlier two-year time intervals gives an indication of United Airlines' impact on the quality of air service in particular markets.

For the 1986-1987 interval, Table 3.11 shows that the QSI values increased in all markets except for New York - Tokyo and Los Angeles - Tokyo. By the late 1980s, basically all carriers used B747 equipment so that it can be assumed that changes in the QSI were the direct result of changing flight frequencies and/or the number of enroute stops.

Since United Airlines announced that it would attempt to capture market share by expanding capacity strategy (30), competing carriers such as Northwest and Japan Airlines in turn responded with stepping up flight frequencies and introducing more nonstop flights (31). This is reflected in the QSI of Northwest, for example, which increased its QSI in the Honolulu - Tokyo and Los Angeles - Tokyo markets while Japan Airlines increased its QSI by increasing flight frequencies and reducing the number of enroute stops in the New York - Tokyo and Chicago - Tokyo markets.

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(30)"Low Fare Strategy Not On The Cards",Tokyo Business Today, 5 June 1986.
(31)Northwest Annual Report 1986, 34.

TABLE 3.11

ANNUAL PERCENTAGE CHANGE OF THE AVERAGE QSI IN NINE INTERNATIONAL TRANSPACIFIC MARKETS

CITY PAIR\ YEAR	1978-79	1980-81	1982-83	1984-85	1986-87
CHICAGO-TOKYO	0 %	-13.6	-40.5 %	0 %	+7.3 %
HONOLULU-TOKYO	-1.79 %	-5.1 %	+2.6 %	+2.86 %	+10.5 %
NEW YORK-TOKYO	0 %	+7.1 %	-8.1 %	+0.8 %	-35.4 %
LOS ANGELES-TOKYO	+20.2 %	+3.6 %	0 %	+40.6 %	-14.3 %
SAN FRANCISCO-TOKYO	+7.9 %	0 %	+2.0 %	-7.4 %	+12.1 %
HONOLULU-HONG KONG	0 %	+22.7 %	0 %	-5.0 %	+14.7 %
SAN FRANCISCO-HONG KONG	+38.4 %	+20.2 %	0 %	0 %	+3.1 %
HONOLULU-SYDNEY	-26.5 %	-10.2 %	+5.6 %	+2.5 %	+11.4 %
LOS ANGELES-SYDNEY	-66.6 %	-17.5 %	-7.2 %	-9.6 %	+4.4 %

SOURCE: Calculations based on OAG, Worldwide Edition, July, 1978-1987.

The Impact of United Airlines' Domestic Network on its Transpacific Passenger Market Shares

One of the opponents of the Pacific Division Transfer was Northwest (NW) which urged an outright disapproval by the Department of Transportation (DOT). Northwest which has a similarly long tradition of serving destinations in the Asia/Pacific region (its first scheduled transpacific flight was inaugurated in 1947) offered scheduled passenger transpacific services to 10 cities in 7 foreign countries in the Northeastern/Central subregion and competed head on with Pan Am on most of its transpacific routes. It was, therefore, the US carrier most affected by the replacement of Pan Am by United Airlines.

Northwest's rationale for opposing the large-scale entrance of United Airlines became clear by analyzing the arguments it presented before DOT. Among other arguments, Northwest claimed that the transfer would make United Airlines so strong over the long term that no other US flag carrier, not even Northwest, would be able to compete over the North/Central Pacific (32).

According to Northwest, United Airlines' strength would come from its "overwhelming domestic feed strength which would allow it to siphon substantial numbers of passengers away from Northwest, or other carriers, not on the basis of price competition but because it can provide

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(32)"Pacific Transfer Case", 14,672.

on-line service that Northwest cannot match" (33).

In order to understand the issues of "domestic feed strength" and "on-line service", an analysis of the US domestic networks of United Airlines and Northwest is necessary. Figure 3.26 shows the domestic network of United Airlines as of 1987. It flew to a total of 165 cities and was the only US carrier serving all 50 US states. Major hubs were Chicago, Denver, San Francisco, and Washington, D.C.(34). Since United Airlines' domestic network of 1987 insignificantly changed over 1985, it can be compared with that of Northwest in 1985. Northwest served 74 cities in 27 states and had Minneapolis as a hub (35)(Figure 3.27). The comparison shows that United Airlines has a larger network.

Research by the Public Counsel suggests that around 30 percent of the passenger volume in the US-Japan market is non-gateway traffic, that is traffic that does not originate at one of the US transpacific gateway airports such as Chicago, Honolulu, New York, Los Angeles, Portland, San Francisco, and Seattle.

By serving more domestic points, United Airlines could, therefore, theoretically capture a larger share of the non-gateway transpacific passenger market than Northwest

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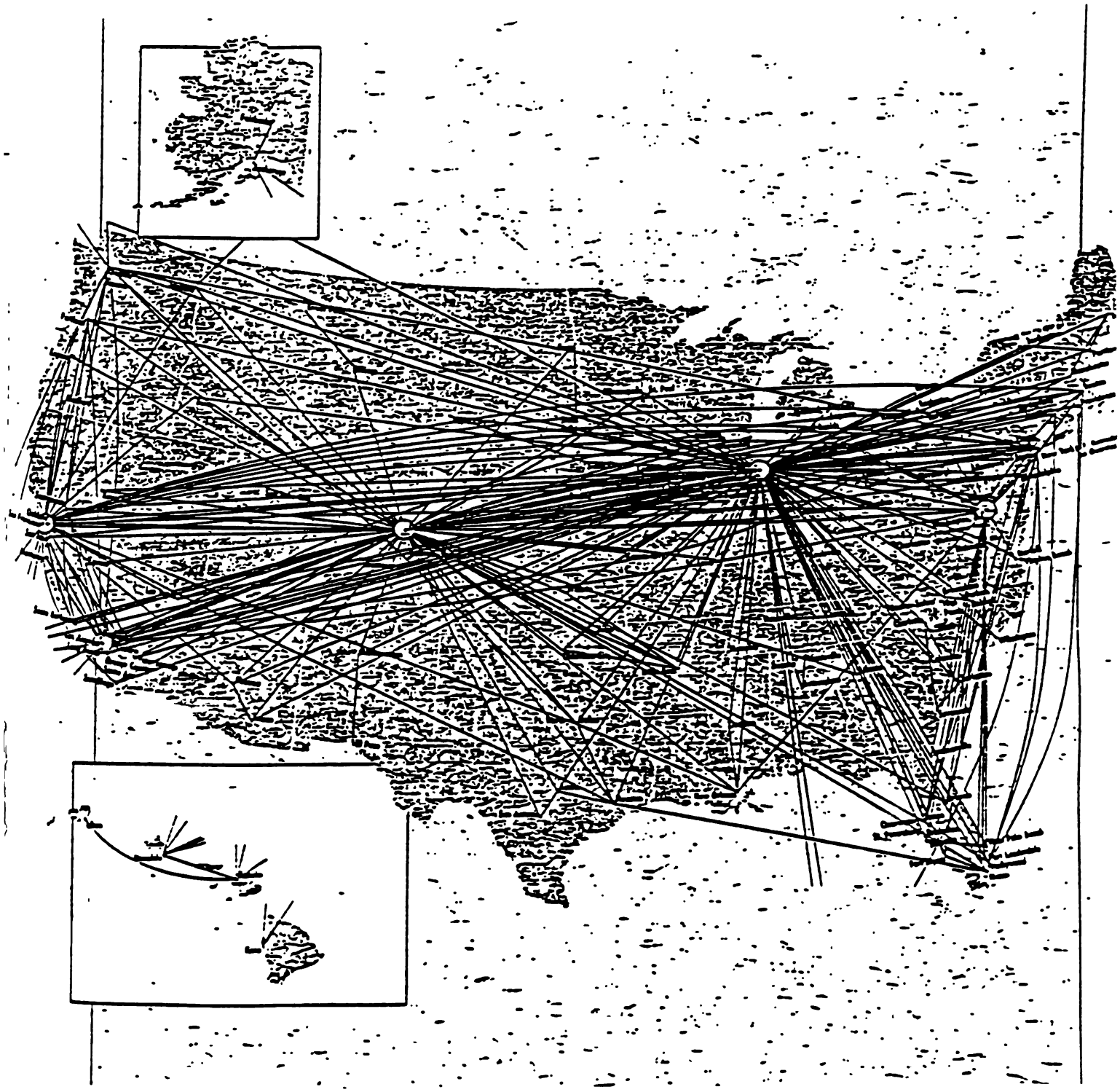
(33)Ibid., 14,672.
(34)"United Airlines Annual Report 1985", 14.
(35)Northwest Airlines,Northwest Annual Report 1985 (Minneapolis, 1985).

FIGURE 3.26

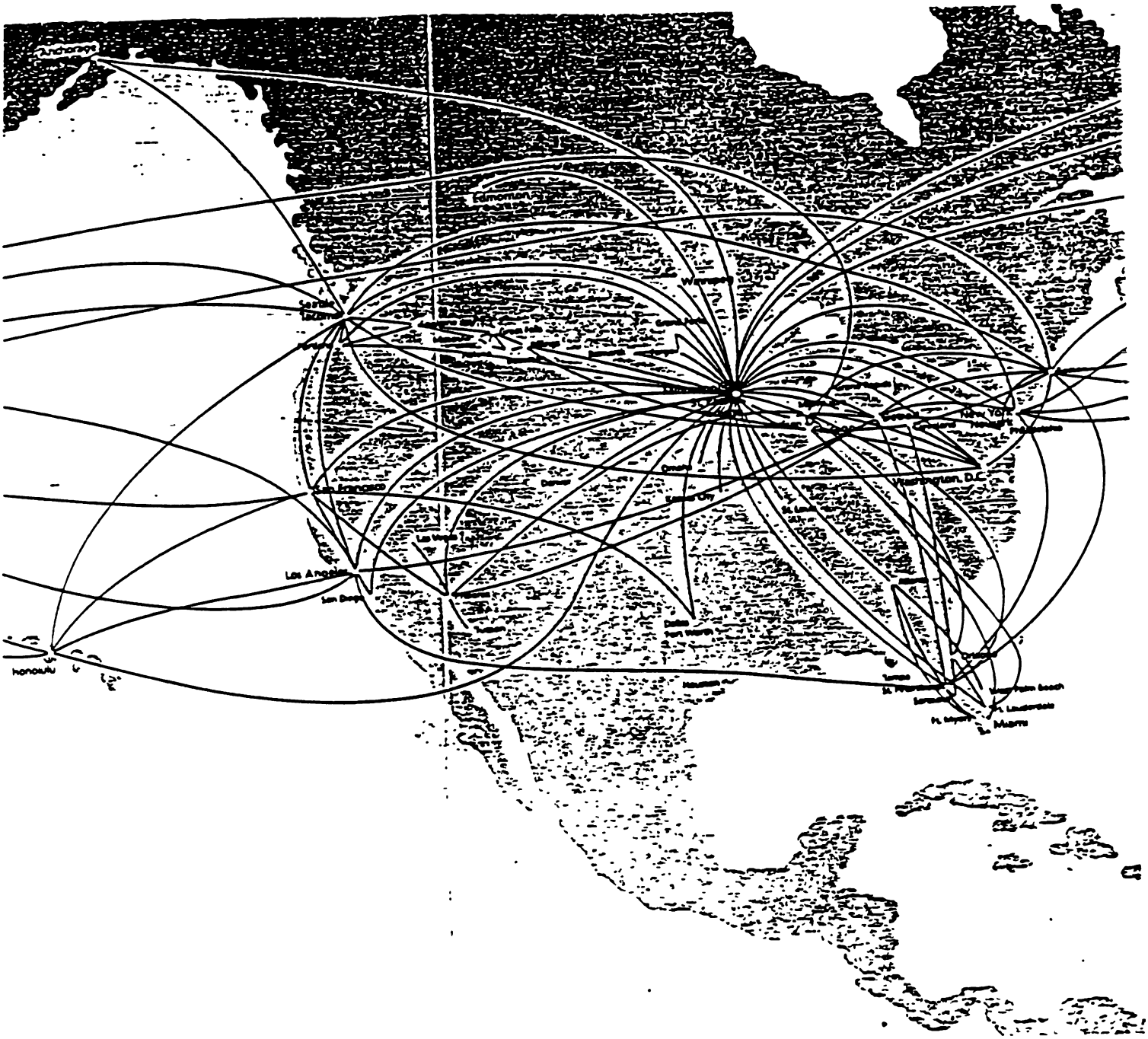
UNITED AIRLINES' US DOMESTIC NETWORK IN 1987



SOURCE: United Airlines Fact Book 1988, 15.

FIGURE 3.27

NORTHWEST AIRLINES' US DOMESTIC NETWORK IN 1985



SOURCE: Northwest Airlines Annual Report 1985, 1.

serving fewer domestic points. At the same time, by feeding international transpacific flights on its own rather than depending on other carriers, United Airlines could offer on-line service. This means that passengers could transfer from one United Airlines flight to another United Airlines flight which is more convenient than interlining where passengers change airlines during their trip. This improvement in passenger service could translate into carrying a disproportionally higher share of the trans-pacific passenger market.

The discussion of the market share showed that United Airlines seemed to be able to improve its market share in several markets as a result of having better on-line connections. In the case of San Francisco, for example, United Airlines increased its market share by 4 percent due to stepping up connection flights at that airport. However, this marginal increase could surly not be considered "dis-proportional" as Northwest argued before the DOT in 1985.

How wrong Northwest's rationale was with respect to United Airlines' feeding capability as a result of its large domestic network became especially obvious in the case of the Chicago - Tokyo market. As previously pointed out, Chicago is United Airlines' main US domestic hub offering 393 daily departures to almost 100 cities a day. United Airlines therefore had an enormous feeding potential which nevertheless did not materialize as indicated by the

marginal percentage point increase of 2 percent. The conclusion of this development is that Northwest's concern about United Airlines gaining a disproportionate transpacific passenger market share was unjustified.

The impact of United Airlines was limited for a variety of reasons. First, although around 30 percent of the passenger traffic on US - Japan routes might be non-gateway traffic, it can be conversely stated that around 70 percent of passenger traffic on these routes is gateway traffic, therefore, indicating that passenger traffic to Japan is relatively concentrated at a few cities in the USA. As a result a large domestic feeder network does not necessarily represent a major competitive advantage (36). The high degree of traffic concentration at US gateways also becomes obvious by the fact that new US gateways developed very slowly and so far were not attractive to transpacific carriers. Partially responsible for this development were payload/range considerations due to the unavailabilty of long-range aircraft.

Minneapolis opened as a transpacific gateway in 1983 and still is served only by Northwest. Similarly, Washington,D.C.

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(36) However, Northwest saw this differently. During the hearing before the DOT in 1985, Northwest, as a result of its concern of United Airlines competitive advantage was in the process of acquiring Republic Airlines. The merger of the 2 carriers' domestic networks strengthened Northwest's feed of international flights so that it was in a position of gaining a disproportionate share of the US - Asia/Pacific passenger market.

which was also available for quite some time is so is so far only served by All Nippon Airways. United Airlines did not use domestic hubs like Denver and Washington, D.C., as a gateway for fligts across the Pacific which in turn is an indication of the limited opportunities to exploit a domestic feeder network for transpacific flights.

Second, the emphasis on on-line service seems to ignore the fact that price sensitive passengers base their decision to fly with an airline on a variety of service factors among which on-line service could be of minor relevance. In general, fare pricing is of particular concern to the relatively price-elastic visiting friends and relatives or leisure traveler who usually pays for himself as opposed to the business traveler, for example, whose ticket expenses are borne by the company. One can reasonably assume that the visiting friends and relatives, and leisure traffic which accounts for a substantial proportion of the total traffic to the Central and South-eastern subregion, respectively, would prefer an interline flight to an on-line flight if the former was priced lower. Even the relatively price-inelastic business traffic which makes up most of the traffic to the Northeastern subregion might discount the importance of on-line service since other service features such as on-time performance and the quality of inflight service are also of relevance.

The aforementioned fact that United Airlines did not have any experience in international markets served by high quality service oriented airlines contributed to United Airlines' modest impact on international transpacific competition.

The Impact of United Airlines' Apollo CRS on its Transpacific Passenger Market Shares

A second major argument of Northwest against the transfer of the Pan Am Pacific Division was United Airlines' dominating APOLLO computer reservation system (CRS) which would allow it to divert a disproportionate share of the passenger volume to its international transpacific flights by "interfering with other carriers' travel agents and by making favorable arrangements with Japan Airlines' CRS JALCOM, Japan's dominant CRS"(37).

In order to understand the rationale of this argument, it is necessary to discuss the distribution channels of an airline for its products. A distribution channel of fundamental importance to the airlines are travel agents. The world average is that between 75 and 85 percent of all airline tickets are sold through

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(37)"Pacific Transfer Case", 14,672.

travel agents (38). United Airlines estimates that travel agents accounted for some 80 percent of all airline tickets sold in the USA in 1987 (39). Research by the DOT suggests that in 1986 approximately 95 percent or 24,693 US travel agents were automated and did their ticket bookings through one or more of the five major CRSs SABRE, APOLLO, SYSTEMONE, DATAS II, and PARS (40).

These systems are completely or for the most part owned by US airlines. In 1986, the two main systems were SABRE and APOLLO. While SABRE was installed in 35.1 percent of all automated travel agencies and accounted for 42.9 percent of all revenues of tickets booked through a CRS, APOLLO was installed in 26.4 percent of all automated travel agencies and accounted for 32.4 percent of all CRS revenues in the USA (41). Figure 3.28 exhibits that United Airlines' APOLLO system was a significant force and controlled in some cases between 30 and 50 percent of the market in US cities which serve as international transpacific gateways.

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(38)Stephen Shaw, Airline Marketing and Management, 2nd ed. (London: Pitman Publishing LTD., 1985; reprint ed., Malabar, Florida: Robert Krieger Publishing Co., Inc., 1988), 201.
(39)"United Airlines Fact Book 1988", 27.
(40)US Department of Transportation, Study Of Airline Computer Reservation Systems(Washington, D.C.: Goverenment Printing Office, May 1988), 20.
(41)Ibid., 43.

FIGURE 3.28

MARKET SHARES OF THE TOP TWO CRS VENDORS IN TERMS OF ANNUAL REVENUES IN SELECTED LARGE HUBS IN 1986

Chicago

CRS	Market Share
APOLLO (UA)	50.52 %
SABRE (AA)	41.82 %

Honolulu

CRS	Market Share
APOLLO (UA)	74.41 %
SABRE (AA)	25.59 %

Los Angeles

CRS	Market Share
SABRE (AA)	41.15 %
APOLLO (UA)	39.41 %

New York

CRS	Market Share
SABRE (AA)	61.30 %
APOLLO (UA)	11.95 %

San Francisco

CRS	Market Share
APOLLO (UA)	42.33 %
SABRE (AA)	39.42 %

SOURCE:"Study on Airline CRSs", 159-163.

The dominance of APOLLO presented so far, however, has to be put into perspective when United Airlines' trans-pacific markets are discussed. Data exhibited in Figure 3.28 are aggregated and based on the total revenues CRS vendors realized by selling tickets through their reservation systems. The proportion of United Airlines transpacific tickets sold by travel agents in a particular city through APOLLO cannot be determined with these data. Data reporting how many transpacific passenger tickets are booked through a particular CRS

are kept confidential by the airlines for competitive reasons. Therefore, the establishment of a quantitative relationship between CRS market shares and passenger shares is not possible in this thesis.

After discussing the dominant market position of United Airlines' APOLLO system in the USA in general and in selected US gateway cities in particular, the question arises why this dominance which had existed for years before the Pacific Division Transfer suddenly became a source of concern for Northwest. The answer most likely lies in the fact that Northwest feared that a combination of APOLLO's dominance in the USA and United Airlines' significant air transportation presence in international transpacific markets would result in favoring flights of United Airlines owning the APOLLO system over those of competitors participating in the CRS. The concern of Northwest seemed justified when considering that CRS hosts practiced various forms of discrimination against airlines using the system for selling their tickets.

The CAB promulgated rules to govern the operation of airline-owned CRSs which became effective in 1984. Prior to that year, some CRSs ranked and displayed flights in response to a travel agent's inquiry according to a procedure which favored those by the airline owners.

In addition, the maintenance of good business relation-

ships between CRS vendors and their travel agent subscribers might have induced some agents to book a larger proportion of their customers on flights operated by the CRS vendor than it would otherwise be the case (this phenomenon is referred to as the "halo" effect). Even though the CAB rules were supposed to alleviate unfair competitive practices as mentioned above, the CRS designs after 1984 still left enough room for various forms of discrimination which favored the flights of a CRS vendor. The "halo" effect, for instance, still accounted for almost 14 percent of APOLLO's domestic passenger revenues in 1985 and 1986 (42). Also, CRSs provided more comprehensive services and more reliable information on a vendors's airline than on that of a competitor (43).

Despite the lack of adequate data to quantitatively evaluate the relationship between CRS dominance and passenger market shares, a qualitative assessment of this relationship should be done.

The afore-discussed impact of discrimination against of non CRS vendors leads to the assumption that United Airlines combining the dominance of its CRS with a significantly large number of flights in certain markets could theoretically capture a larger share of the passenger market than a carrier like Northwest

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(42)Ibid., 153.
(43)Ibid., 84.

lacking such combintion.

The combination of United Airlines' CRS dominance and significant presence in international transpacific market could also lead to attracting additional travel agents (either newly established ones who have not decided on their CRS yet or existing ones who decide to switch over to a new CRS) for two main reasons. First, a vendor airline with a significant number of flights in a certain market is in a position to offer travel agents in that market more valuable inducements - free travel on the vendor airline, class-of-service upgrades, bonuses for the vendor airline's frequent flyer program, cooperative advertising, or greater commissions.

Second, in markets where the CRS vendor is the dominant airline and where travelers - particularly business travelers - regard the airline as the first choice, it may make good business sense for the agent to decide for that airline's CRS (44).

The attraction of additional travel agents - this is probably Northwest's hint at "interfering with other carriers' travel agents" - could further increase the dominance of APOLLO in certain markets which in turn could theoretically result in an increasing passenger market share of United Airlines.

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(44)Ibid., 108.

When the theoretical impact of United Airlines' CRS is compared with the actual development,it becomes clear that Northwest's concern of United Airlines gaining a disproportionate share of the transpacific passenger volume is unjustified. Similar to the marginal impact of the domestic network of United Airlines on its transpacific market shares, the effect of APOLLO in terms of increasing United Airlines' passenger market shares in transpacific markets was insignificant.

As previously pointed out, United Airlines marginally increased its market shares in 6 out of 9 transpacific markets analyzed. These markets included gateways such as Chicago, Honolulu, and San Francisco, where United Airlines also had CRS dominance so that it might be assumed that part of the growth was the result of combining its CRS dominance with a large number of international transpacific flights. Also, it is possible that United Airlines attracted additional travel agents who contributed to additional sales.

However, taking into account the fact that Northwest does not own a CRS but "only" participates in the five CRSs but was still able to increase its market share indicates that CRS dominance does not automatically translate into larger passenger shares.

The same is true by looking at the markets where United Airlines experienced stationary or declining market shares

although APOLLO had a strong market position. This might again suggest that United Airlines' CRS was unable to translate its market position into a corresponding passenger share. The only exception to this was the New York - Tokyo market where United Airlines' passenger share declined by 13 percent and its CRS share was 11.89 percent. Responsible for United Airlines' inability to use its dominant APOLLO CRS again might be an indication of United Airlines' poor service performance on most of its transpacific flights.

The aforementioned lack of serving international markets and a multitude of mechanical and organizational problems might have had a stronger impact on United Airlines' market performance than expected by opposing carrier Northwest.

United Airlines' marketing efforts so far turned out to be inadequate for the development of substantial market shares in US-Pacific markets. The marketing tactics of US competitor Northwest with its 40 year long tradition of serving markets in the Asia/Pacific region and various foreign competitors known for their outstanding service certainly contributed to United Airlines' modest market share performance.

Main conclusion of the study is that in spite of its enormous domestic system and feed potential and its US market strength with the APOLLO CRS, United Airlines has not yet been able to use these comnpetitive advantages to increase market shares in US-Pacific markets.

Chapter IV

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATION FOR FUTURE STUDY

Overall Market Trends in Scheduled Passenger Traffic

One purpose of this study is to identify overall market trends in scheduled air passenger services between the USA and selected countries in the Asia/Pacific region.

A historical research method was applied to determine the magnitude and direction of changes from 1977 to 1987 in passenger volume and passenger structure (US citizens versus non US citizens). Analyzed were also trends in the number of transpacific airlines and number of city pairs served. In order to account for the diversity among Asia/Pacific region countries in terms of demographic, geographic, political, and economic factors, this region was analyzed in terms of its subregions as defined by the International Civil Aviation Organization (ICAO). The researcher chose countries in the three subregions according to their political and economic importance to the Asia/Pacific region and the USA.

This study shows that the passenger traffic volumes

between the USA and selected Pacific rim countries increased from 2.5 million passengers in 1979 to 5 million passengers in 1987.

The Northeastern subregion with Hong Kong, Japan, People's Republic of China, South Korea, and Taiwan was the largest passenger market and grew by an average annual rate of 14 percent. It accounted for 1.8 million passengers and 3.7 million passengers in 1979 and 1987, respectively. This was equivalent to around three quarters of the total trans-pacific traffic volume in both 1979 and 1987.

In 1979, approximately 1.5 million passengers traveled to Japan making it the largest traffic point in the North-eastern subregion. The large traffic volume between the USA and Japan is largely a reflection of the substantial economic ties between the two countries. Consistent with growing trade, the passenger traffic to Japan also grew and had a volume of 3.75 million passengers in 1987. Despite Japan's importance as a major traffic point, the analysis also reveals that the growth rate of passenger traffic to Japan was lower than that to other countries in the North-eastern subregion. Growing trade links between the USA and these countries, relaxation of overseas travel restrictions, and the introduction of new long-range aircraft equipment, making an intermediate stop at one of Japan's increasingly congested airports unnecessary, contributed to this trend.

The share of non-US citizens to the Northeastern sub-

region was the highest of all subregions. In 1979, 73 percent of all passengers traveling to the Northeastern subregion were non-US citizens. Although this share decreased over the years, it was still 65 percent in 1987. The share of US citizens went up because of a growing interest of US tourists in countries like South Korea and the People's Republic of China.

Up to what extent the share of non-US citizens continues to decline remains to be seen. The aforementioned lifting of international travel restrictions in Taiwan and South Korea, and the intention of the Japanese government to reduce the country's trade deficit by promoting more travel by Japanese citizens could result in a higher share of non-US citizens on US-Northeastern routes.

The share of non-US flag carriers was above 50 percent throughout the time period studied and is mainly a reflection of the strong flag carrier loyalty Asian travelers have for their home airlines.

The Southeastern subregion was the second largest market in the Asia/Pacific region. It was comprised of Australia, New Zealand, Fiji, and Tahiti.

In 1979, a total of 450,000 passengers traveled to this subregion and accounted for 16 percent of the transpacific passenger total. The passenger volume increased at an average annual rate of 10.4 percent and by 1987, reached 815,000 passengers which was equivalent to 18 percent of

the passenger total.

The growth in passenger volume was mainly the result of the subregion's growing attractiveness as a tourist destination among US leisure travelers. This in turn led to an increase of the US citizen share to the Southeastern subregion from 41 percent in 1979 to 55 percent in 1987. The traffic growth in the US - Southeastern market was mainly absorbed by non US flag carriers as indicated by their continuously high share of above 60 percent.

The Central subregion with Indonesia, Malaysia, the Philippines, Singapore, and Thailand was the smallest market and grew by an annual average rate of 8.7 percent.

In 1979, a total of around 150,000 passengers traveled from the USA to this subregion which was equivalent to 5 percent of the total transpacific passenger volume. This share slightly increased to 6 percent in 1987 when some 250,000 passengers traveled to the Central subregion.

A relatively small trade volume with the USA and the lack of substantial US tourism to the Central subregion due to high cost and long distances are largely responsible for the small size of this market.

Passenger traffic to this subregion is mainly visiting friends and relatives (VFR) traffic which is the result of both significant US military presence and substantial emigration from this subregion to the USA.

The share of US citizens to the Central subregion was

the highest of all subregions and increased from 58 percent in 1979 to 69 percent in 1987.

The high share of US citizens did not translate into a correspondingly high share for US flag carriers. Non-US flag carriers continuously increased their market share from 56 percent in 1979 to 79 percent in 1987 suggesting that US citizens preferred traveling on airlines like Malaysian, Singapore Airlines, and Thai International which are known for their aggressive fare pricing and high quality service.

Changes in the Number of International Airlines Serving the Market

The analysis of the number of international airlines offering services between the US and countries in the Asia/Pacific region displays that the number increased from 11 in 1977 to 22 in 1987. At the same time, the number of Asia/Pacific destinations served from US gateways on a non-stop basis grew from 10 to 16.

This trend suggests that transpacific airline service became more competitive through multiple carrier designations rather than through increasing the number of city pairs served. Reasons for this development could be the lack of cities with characteristics which would make them gateways for direct air services. These characteristics include a business community maintaining commercial and political relationships with people in the

Asia/Pacific region, an ethnic community generating visiting friends and relatives traffic, and tourist attractions which are of primary interest to the leisure traveler. Not too many cities combine these characteristics with a large enough population base to justify a nonstop airline service.

Traffic Supply and Demand at US Gateways

The US gateways were analyzed in terms of the number of passenger seats offered by and revenue passengers carried by the international transpacific airlines from these US airports.

The ten-year analysis from 1977 to 1987 shows a growth trend at all gateways except for Anchorage which experienced a slight decline in available passenger seats.

The growth pattern varied from gateway to gateway, and in terms of available passenger seats, ranges from an average annual percentage change of plus 8 percent at Honolulu to plus 35 percent at Los Angeles. Similarly, in terms of revenue passengers carried, the average annual change ranges from plus 2 percent at Anchorage to plus 51 percent at Los Angeles.

Responsible for the growth trend at the gateway airports are the increase in passenger traffic between the USA and the Asia/Pacific region and changes in flight operations as a result of the introduction of long-range aircraft

equipment.

The study also exhibits that Honolulu is the major gateway to destinations in the Asia/Pacific region. In 1977, it accounted for 53 percent of all seats supplied and for 55 percent of all passengers carried. When compared with 1987, however, the analysis shows that Honolulu's dominance declined. In 1987, it had a 26 percent share of the passenger seats available and a 35 percent share of the passengers carried.

The reason for this decrease is mainly the introduction of long-range aircraft which make a technical stopover in Honolulu unnecessary.

Los Angeles International Airport seems to have benefited the most from the advent of new long-range aircraft. It increased its share of passenger seats available from 10 percent in 1977 to 26 percent in 1987. Simultaneously, its share of passenger carried grew from 10 percent to 24 percent in the same time frame.

The number of new gateways offering nonstop services to destinations in the Asia/Pacific region did not significantly increase during the 1977-1987 time period. Minneapolis and Portland became gateways in 1982 and 1983, respectively.

However, both airports have not captured a substantial proportion of the total transpacific supply and demand. While Portland accounted for around 1 percent of both the

total available passenger seats and revenue passengers carried in 1987, Minneapolis' share was less than 1 percent in the same year.

Main reason for this very marginal impact are the difficulty to attract transpacific traffic from other firmly established gateway airports and the lack of characteristics which are essential to become a gateway for nonstop services to cities in the Asia/Pacific region.

Market Share and Quality of Air Service from 1977 to 1985

A second purpose of this study is to investigate nine selected transpacific air services of Pan Am in terms of market share and quality of air service from 1977 to 1985 when Pan Am sold its Pacific Division to United Airlines.

The analysis reveals that Pan Am's share of transpacific passengers gradually declined in five out of the nine markets.

One reason for Pan Am's deteriorating market share performance is the addition of new competitors to transpacific city pair markets as a partial result of increasingly liberal bilateral agreements between the USA and countries in the Asia/Pacific region. The new competitors are mainly Asian airlines which are known for their agressive fare pricing and high quality of service.

In order to compete effectively against these market

entrants, Pan Am would have been required to allocate substantial amounts of marketing resources to the region.

Considering the poor financial performance of Pan Am in the 1977-1985 time period, Pan Am may have not allocated sufficient resources necessary to maintain or improve its market share position in an increasingly competitive environment. For examle, the replacement of the Pacific aircraft equipment by new long-range, large payload airplanes would have cost several billion dollars which Pan Am could not afford.

The quality of service was measured by using a quality service index (QSI) developed by the Civil Aeronautics Board (CAB) in the late 1960s.

An analysis of the QSI in the nine markets shows a rather fluctuating picture and no consistent trend. Pan Am's QSI improved in three markets, remained unchanged in four markets and declined in one market.

In the markets analyzed, Pan Am exclusively used B747 equipment on its transpacific routes. Most B747 airplanes were long-range SP versions enabling Pan Am to offer non-stop flights on many routes which were served by competing airlines on a multiple stop basis.

Therefore, changes in the QSI were largely the result of changes in the weekly flight frequency.

The average QSI in all markets improved over the ten year period from 1977 to 1987 and is an indication of the

the fact that international transpacific airlines increased the number of weekly flight frequencies and introduced more nonstop flights.

Although the growth in weekly flight frequencies was most likely one respone of airlines to cope with the passenger traffic increase across the Pacific, the decision to offer a larger number of weekly flights might have been also taken in order to gain a competitve advantage over another carrier having fewer weekly flights between two cities.

Similarly, the availability of long-range aircraft equipment enables airlines to increase the number of nonstop flights which can improve their competitive position by offering a shorter travel time than airlines with multiple stop flights.

Impact of United Airlines' Market Entry

A third purpose of this study is to evaluate the impact of United Airlines' large scale entrance in the Asia/ Pacific. It was modest in terms of market shares and quality of air services.

In the nine markets analyzed, United Airlines increased its market shares in six markets only on a very marginal basis and market share increases ranged from 2 to 8 percent. In the remaining three markets, United Airlines either did not increase its market shares or showed a decline.

Although the researcher attempted to select city pair markets which were representative for United Airlines' performance in other transpacific markets between the USA and the Asia/Pacific region, it is not clear whether or not United Airlines' overall transpacific performance developed as indicated in the nine markets analyzed. A more comprehensive study which would analyze all former Pan Am markets including intra-Asian city pair markets now served by United Airlines could give an answer to this question.

The analysis in this study suggests that United Airlines' modest performance could be mainly attributed to its lack of experience in serving a variety of international markets with distinguished cultural characteristics.

Mechanical problems with airplanes and a centralized organizational structure which is inadequate in a vast geographic region which requires a flexible and fast decision-making process, further contributed to United Airlines' modest performance.

Future investigation could determine whether United Airlines, after incorporating a new organizational structure and a large number of inflight and on-ground service improvements for its Pacific Division in 1987, was able to improve its performance in transpacific markets.

An analysis of United Airlines' QSI shows that it improved its quality of service in four of the nine markets

evaluated. This was the result of stepping up flight frequencies and introducing more nonstop flights. United Airlines' large scale market entrance also impacted other transpacific competitors which in turn increased their QSI.

A correlation analysis between QSI and market share suggests that an improvement in the QSI did not result in a correspondingly higher passenger market share.

However, there seems to be a high correlation between the QSI parameter flight frequency and market share. Carriers offering a higher flight frequency than their competitors seem to gain an overproportional market share.

This study also shows that the opposition and concern of the US carrier Northwest, which opposed the transfer of the Pan Am Pacific Division is so far unjustified.

It argued that United Airlines would gain a disproportionate share of the transpacific passenger volume because of its domestic network strength and APOLLO computer reservation system.

In the markets analyzed, United Airlines was not able to to translate its domestic feed strength and dominant APOLLO system into a correspondingly high passenger share in transpacific markets.

Future studies in this area could show whether or not United Airlines has been able to use these competitive advantages to improve its market share position in US-Pacific markets in the long-run.

The analysis seems to indicate that competition among transpacific carriers was carried out more in service areas other than on-line service and computer reservation system. Important competitive factors most likely included fare pricing and the quality of inflight and on-ground service.

Other important factors contributing to United Airlines' poor performance in the transpacific markets analyzed could be the insufficient allocation of marketing resources to the Asia/Pacific region.

Appendix 1

SHARES OF US/NON-US CITIZENS AND US/NON-US FLAG CARRIERS ON SELECTED TRANSPACIFIC ROUTES

Chicago - Tokyo

Year	Passenger Total	US Citizen (%)	Non US Citizen (%)	US Flag Carrier (%)	Non US Flag Carrier (%)
1979	56,842	71%	29%	100%	0%
1982	52,453	63%	37%	98%	2%
1985	73,403	72%	28%	100%	0%
1987	98,808	62%	38%	65%	35%

Honolulu - Tokyo

Year	Passenger Total	US Citizen (%)	Non US Citizen (%)	US Flag Carrier (%)	Non US Flag Carrier (%)
1979	596,978	13%	87%	36%	64%
1982	536,436	12%	88%	34%	66%
1985	610,669	15%	85%	33%	67%
1987	775,740	12%	88%	34%	66%

New York - Tokyo

Year	Passenger Total	US Citizen (%)	Non US Citizen (%)	US Flag Carrier (%)	Non US Flag Carrier (%)
1979	65,545	58%	42	100%	0%
1982	85,841	55%	45%	100%	0%
1985	233,786	56%	44%	67%	33%
1987	243,204	49%	51%	59%	41%

Los Angeles - Tokyo

Year	Passenger Total	US Citizen (%)	Non US Citizen (%)	US Flag Carrier (%)	Non US Flag Carrier (%)
1979	163,826	34%	66%	39%	61%
1982	301,033	37%	63%	37%	63%
1985	389,594	43%	57%	41%	59%
1987	436,113	38%	62%	36%	64%

San Francisco - Tokyo

Year	Passenger Total	US Citizen (%)	Non US Citizen (%)	US Flag Carrier (%)	Non US Flag Carrier (%)
1979	127,454	38%	62%	40%	60%
1982	165,470	46%	54%	31%	69%
1985	261,923	52%	48%	51%	49%
1987	294,428	49%	51%	58%	42%

Honolulu - Hong Kong

Year	Passenger Total	US Citizen (%)	Non US Citizen (%)	US Flag Carrier (%)	Non US Flag Carrier (%)
1979	23,148	58%	42%	51%	49%
1982	46,920	51%	49%	0%	100%
1985	112,758	62%	38%	0%	100%
1987	121,344	63%	37%	0%	100%

San Francisco - Hong Kong

Year	Passenger Total	US Citizen (%)	Non US Citizen (%)	US Flag Carrier (%)	Non US Flag Carrier (%)
1979	58,244	78%	22%	99%	1%
1982	57,489	76%	24%	100%	0%
1985	52,999	80%	20%	94%	6%
1987	58,054	81%	19%	99%	1%

Honolulu - Sydney

Year	Passenger Total	US Citizen (%)	Non US Citizen (%)	US Flag Carrier (%)	Non US Flag Carrier (%)
1979	147,649	31%	69%	47%	53%
1982	182,383	34%	66%	38%	62%
1985	107,910	47%	53%	31%	69%
1987	181,415	54%	46%	47%	53%

Los Angeles - Sydney

Year	Passenger Total	US Citizen (%)	Non US Citizen (%)	US Flag Carrier (%)	Non US Flag Carrier (%)
1979	^29,699	42%	58%	^100%	0%
1982	3,057	54%	46%	26%	74%
1985	51,317	54%	46%	36%	64%
1987	53,640	59%	41%	39%	61%

SOURCE: US International Air Travel Statistics
(Cambridge, Massachussetts: 1979-1987)

Appendix 2

NONSTOP SERVICES BETWEEN US GATEWAYS AND POINTS IN THE ASIA/PACIFIC REGION

1977

	Northeastern										Southeastern															Central	
US GATEWAY \ ASIA/PACIFIC POINTS	Hong Kong	Fukuoka	Nagoya	Okinawa	Osaka	Seoul	Taipei	Tokyo	Shanghai	Kaoshiung	Auckland	Brisbane	Cairns	Christchurch	Christmas Islands	Guam	Majuro	Melbourne	Nadi	Noumea	Papeete	Port Moresby	Rarotonga	Sydney	Townsville	Manila	Total
Anchorage								X																			1
Chicago								X																			1
Dallas																											0
Honolulu						X	X	X			X					X			X			X	X			X	9
Los Angeles						X	X	X			X									X							5
Minneapolis								X																			0
New York							X	X																			2
Portland								X																			1
San Francisco							X	X			X															X	3
Seattle								X																			1
Total	0	0	0	0	0	2	4	9	0	0	3	0	0	0	0	1	0	0	1	1	0	1	1	0	0	2	21 (25)

SOURCE: ICAO, Traffic by Flight Stage (Montreal: ICAO, August 1977).

NONSTOP SERVICES BETWEEN US GATEWAYS AND POINTS IN THE ASIA/PACIFIC REGION

1978

US GATEWAY \ ASIA/PACIFIC POINTS	Northeastern										Southeastern																Central	Total
	Hong Kong	Fukuoka	Hagoya	Okinawa	Osaka	Seoul	Taipei	Tokyo	Shanghai	Kaoshiung	Auckland	Brisbane	Cairns	Christchurch	Christmas Islands	Guam	Majuro	Melbourne	Nadi	Noumea	Papeete	Port Moresby	Rarotonga	Sydney	Townsville	Manila		
Anchorage								X																				1
Chicago								X																				1
Dallas																												0
Honolulu		X			X	X	X	X			X	Y				X			X				X	X		X		12
Los Angeles						X		X			X																	4
Minneapolis																												0
New York								X																				1
Portland																												0
San Francisco	Y			X				X	X																			5
Seattle								X									•											1
Total	1	1	0	1	1	2	2	7	0	0	2	1	0	0	0	1	0	0	1	0	0	0	1	1	0	1		25 / 23

SOURCE: ICAO, Traffic by Flight Stage (Montreal: ICAO, August 1978).

NONSTOP SERVICES BETWEEN US GATEWAYS AND POINTS IN THE ASIA/PACIFIC REGION

1979

	Northeastern										Southeastern															Central	
US GATEWAY / ASIA/PACIFIC POINTS	Hong Kong	Fukuoka	Nagoya	Okinawa	Osaka	Seoul	Taipei	Tokyo	Shanghai	Kaoshiung	Auckland	Brisbane	Cairns	Christchurch	Christmas Islands	Guam	Majuro	Melbourne	Nadi	Noumea	Papeete	Port Moresby	Rarotonga	Sydney	Townsville	Manila	Total
Anchorage					X	X		X																			3
Chicago								X																			1
Dallas																											0
Honolulu	X	X			X	X	X	X			X	X				X			X			X	X	X		X	14
Los Angeles					X	X		X			X								X		X						6
Minneapolis																											0
New York								X																			1
Portland																											0
San Francisco	X						X	X																			3
Seattle						X		X																			2
Total	2	1	0	0	3	4	1	7	0	0	2	1	0	0	0	1	0	0	2	0	1	1	1	1	0	1	30 / 29

SOURCE: ICAO, Traffic by Flight Stage (Montreal: ICAO, August 1979).

NONSTOP SERVICES BETWEEN US GATEWAYS AND POINTS IN THE ASIA/PACIFIC REGION

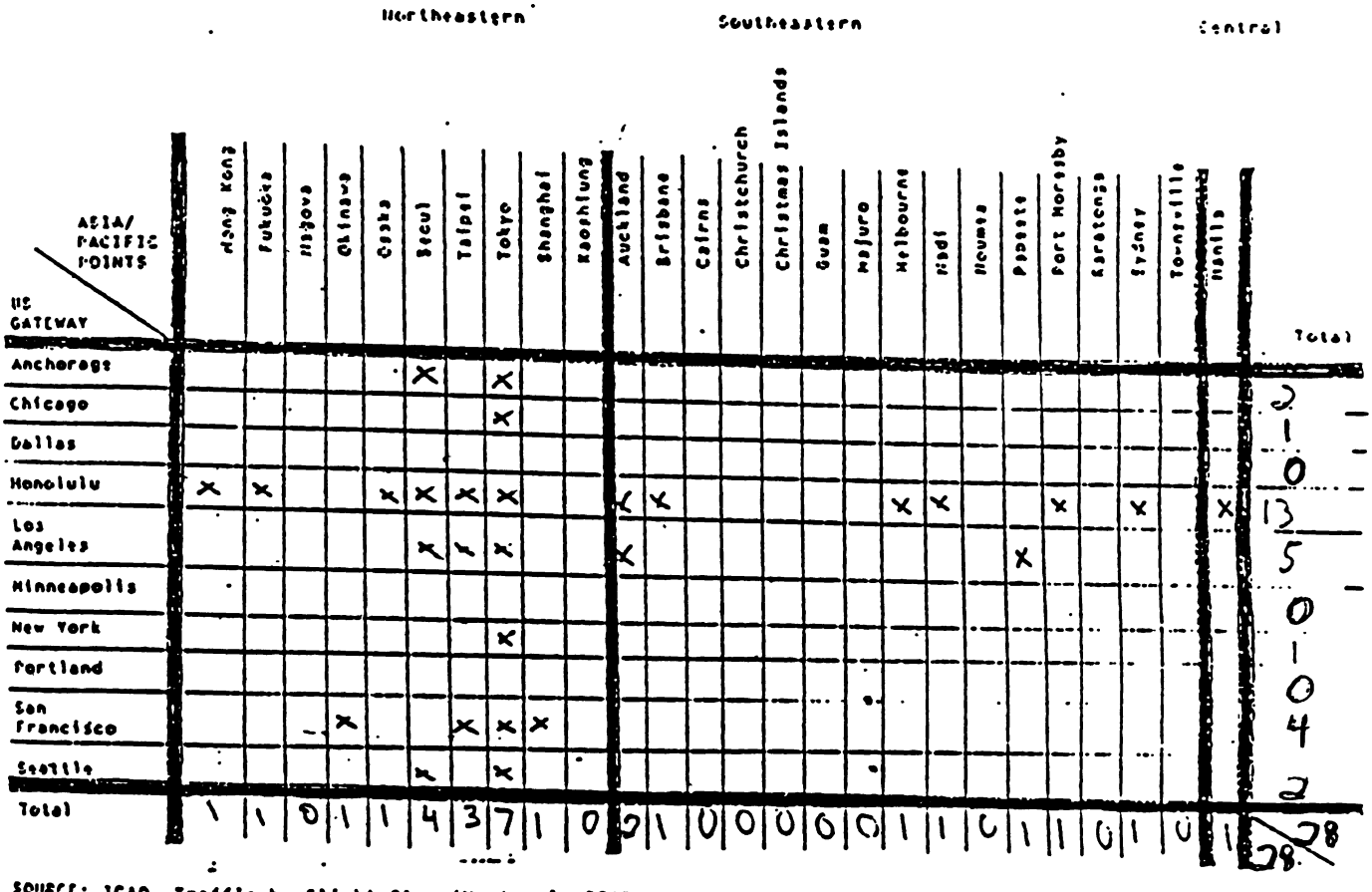
1980

	Northeastern				Southeastern						Central																				
US GATEWAY \ ASIA/PACIFIC POINTS	Hong Kong	Fukuoka	Nagoya	Okinawa	Osaka	Seoul	Taipei	Tokyo	Shanghai	Kaohsiung	Auckland	Brisbane	Cairns	Christchurch	Christmas Islands	Guam	Majuro	Melbourne	Nadi	Noumea	Papeete	Port Moresby	Rarotonga	Sydney	Townsville	Honolulu	Manila	Total
Anchorage						X		X																				2
Chicago								X																				1
Dallas																												0
Honolulu	X				X	X	X	X			X								X			X	X	X		X		11
Los Angeles					X	X	X	X			X										X							6
Minneapolis																												0
New York								X																				1
Portland																												0
San Francisco	X			X			X	X																				4
Seattle						X	-	X																				2
Total	2	0	0	1	2	4	3	7	0	0	2	0	0	0	0	0	0	0	1	0	1	1	1	1	0	1		27

SOURCE: ICAO, Traffic by Flight Stage (Montreal: ICAO, August 1980).

NONSTOP SERVICES BETWEEN US GATEWAYS AND POINTS IN THE ASIA/PACIFIC REGION

1981



SOURCE: ICAO, Traffic by Flight Stage(Montreal; ICAO, August 1981).

NONSTOP SERVICES BETWEEN US GATEWAYS AND POINTS IN THE ASIA/PACIFIC REGION

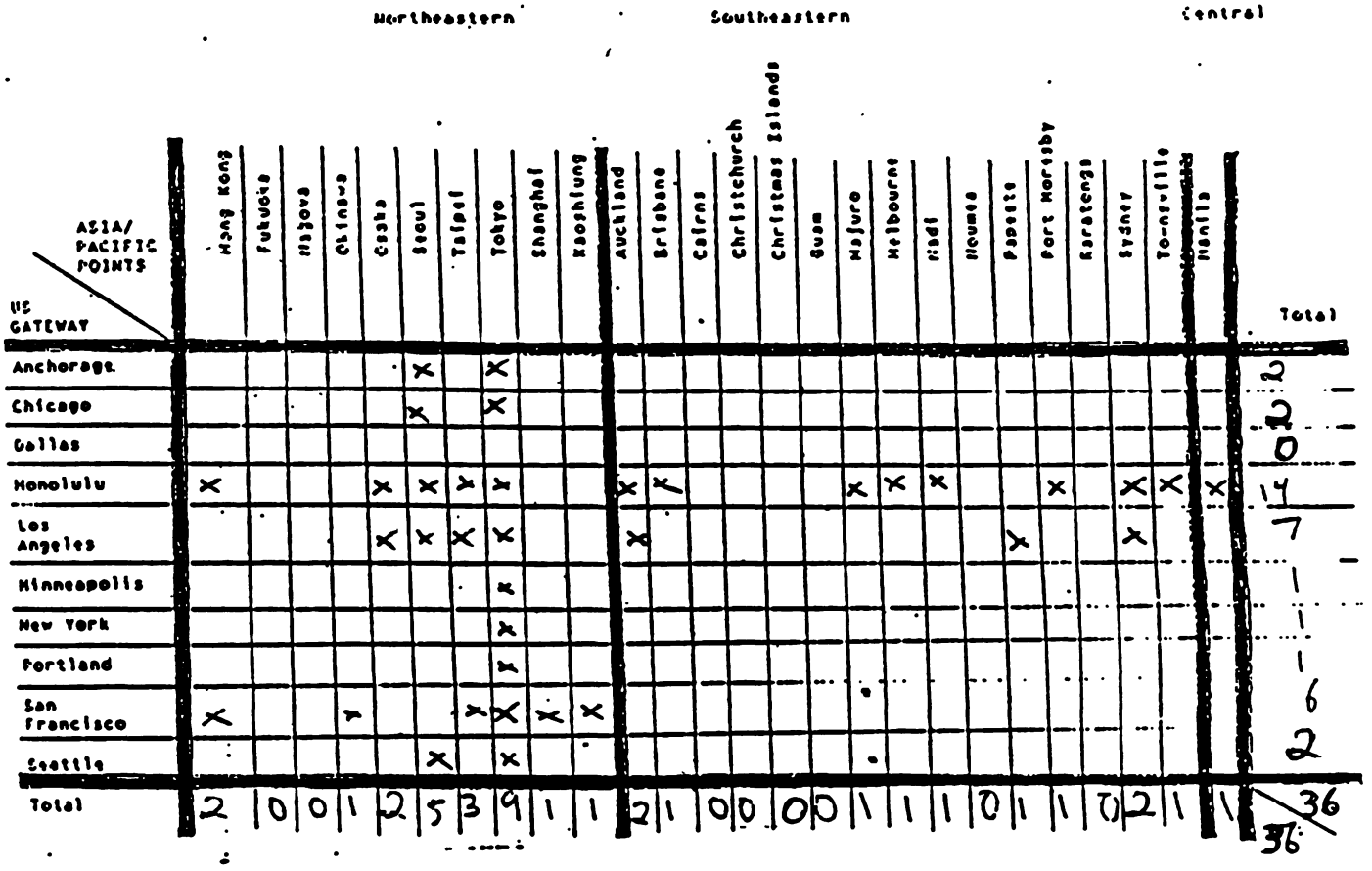
1982

ASIA/PACIFIC POINTS / US GATEWAY	Northeastern: Hong Kong	Fukuoka	Nagoya	Okinawa	Osaka	Seoul	Taipei	Tokyo	Shanghai	Kaoshiung	Southeastern: Auckland	Brisbane	Cairns	Christchurch	Christmas Islands	Guam	Majuro	Melbourne	Nadi	Noumea	Papeete	Port Moresby	Raratonga	Sydney	Townsville	Central: Manila	Total
Anchorage						X		X																			2
Chicago								X																			1
Dallas																											0
Honolulu	X				X	X	X	X			X	X		X				X	X			X		X		X	13
Los Angeles				X	X	X	X	X			X										X			X			8
Minneapolis																											0
New York								X																			1
Portland																											0
San Francisco	X			X	X		X	X	X																		6
Seattle						X		X																			2
Total	2	0	0	2	3	4	3	7	1	0	2	1	0	1	0	0	0	1	1	0	1	1	0	2	0	1	33

SOURCE: ICAO, Traffic by Flight Stage (Montreal: ICAO, August 1982).

NONSTOP SERVICES BETWEEN US GATEWAYS AND POINTS IN THE ASIA/PACIFIC REGION

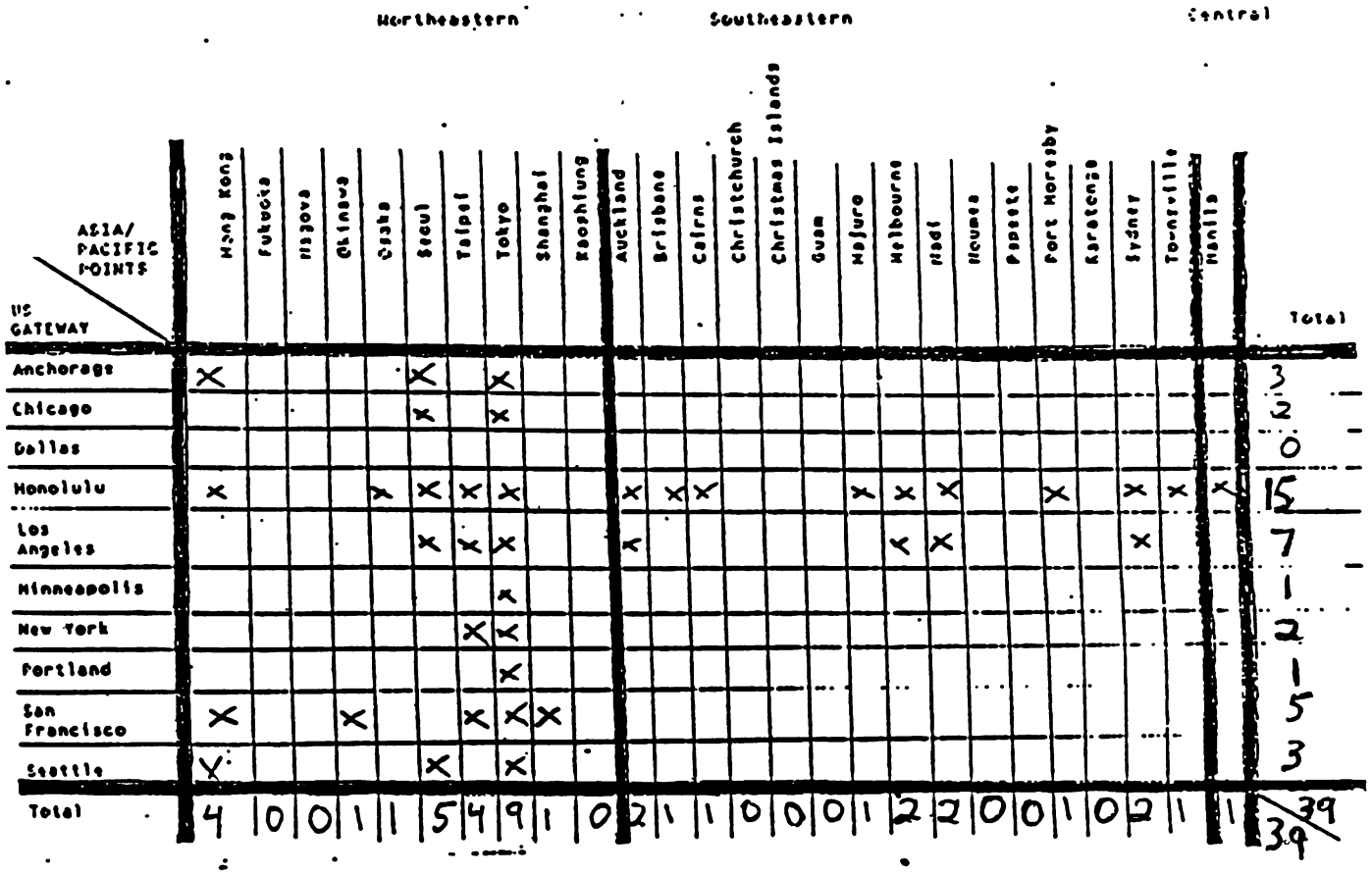
1983



SOURCE: ICAO, Traffic by Flight Stage (Montreal: ICAO, August 1983).

NONSTOP SERVICES BETWEEN US GATEWAYS AND POINTS
IN THE ASIA/PACIFIC REGION

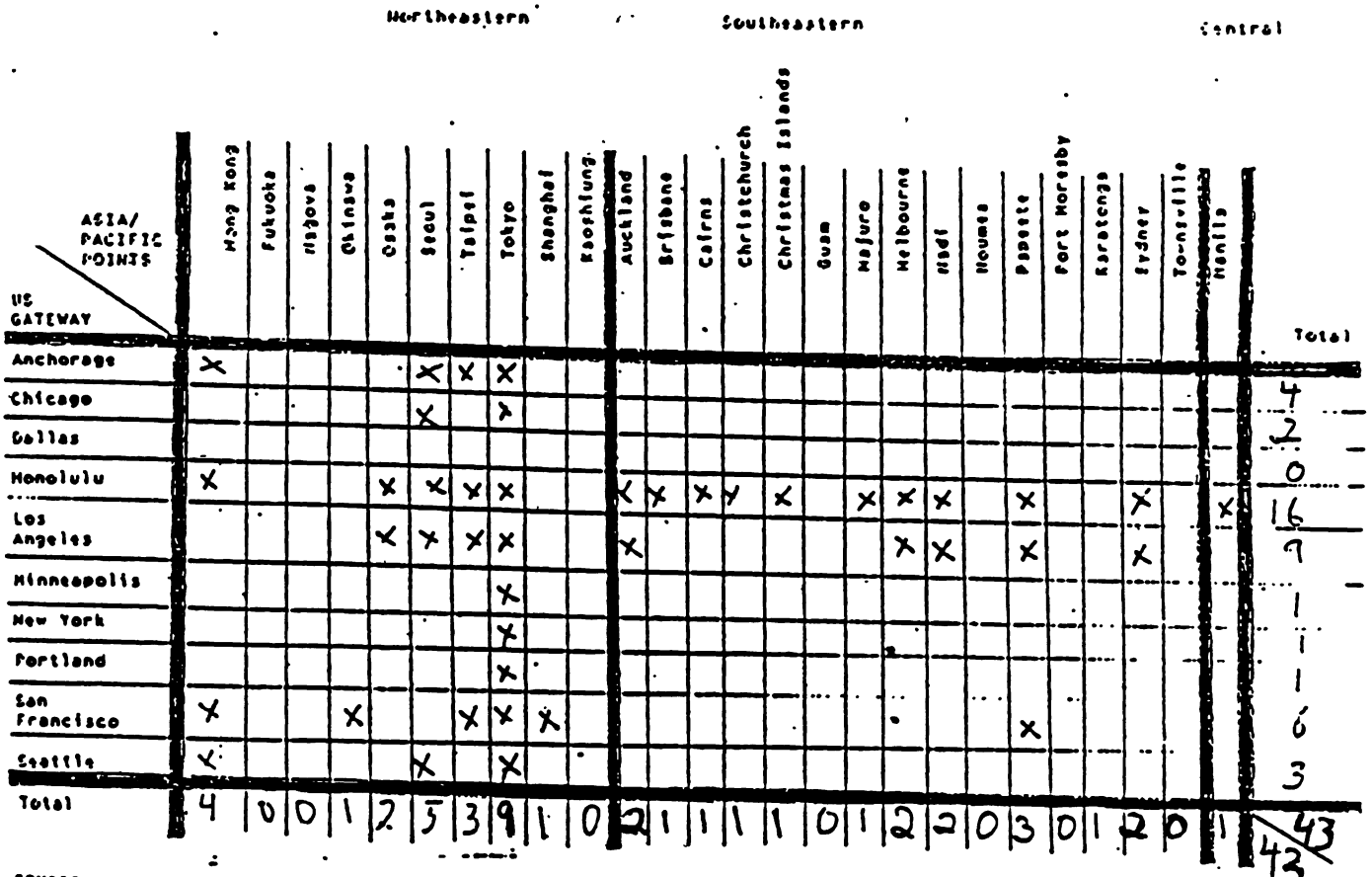
1984



SOURCE: ICAO, Traffic by Flight Stage (Montreal: ICAO, August 1984).

NONSTOP SERVICES BETWEEN US GATEWAYS AND POINTS IN THE ASIA/PACIFIC REGION

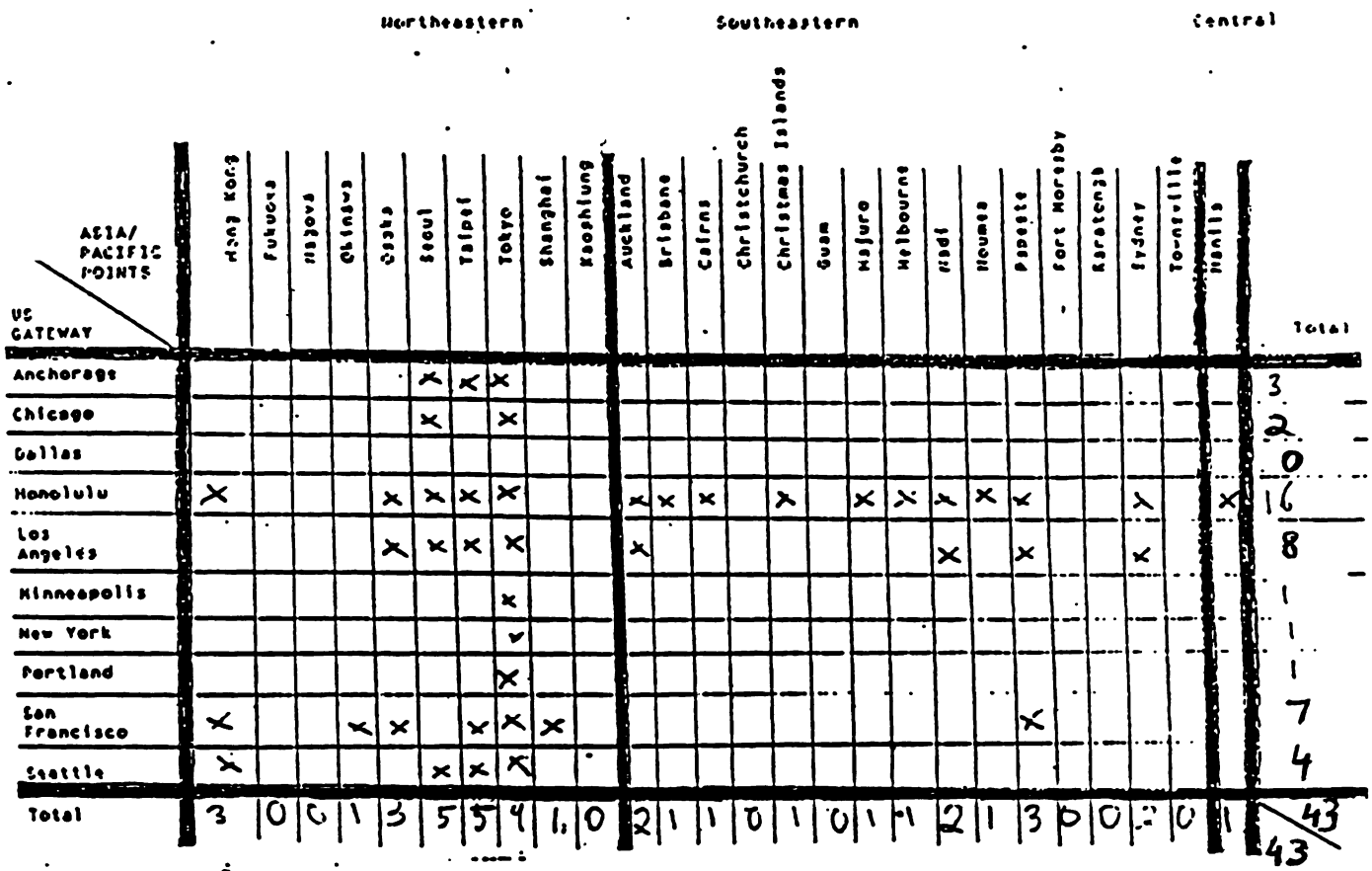
1985



SOURCE: ICAO, Traffic by Flight Stage (Montreal: ICAO, August 1985).

NONSTOP SERVICES BETWEEN US GATEWAYS AND POINTS IN THE ASIA/PACIFIC REGION

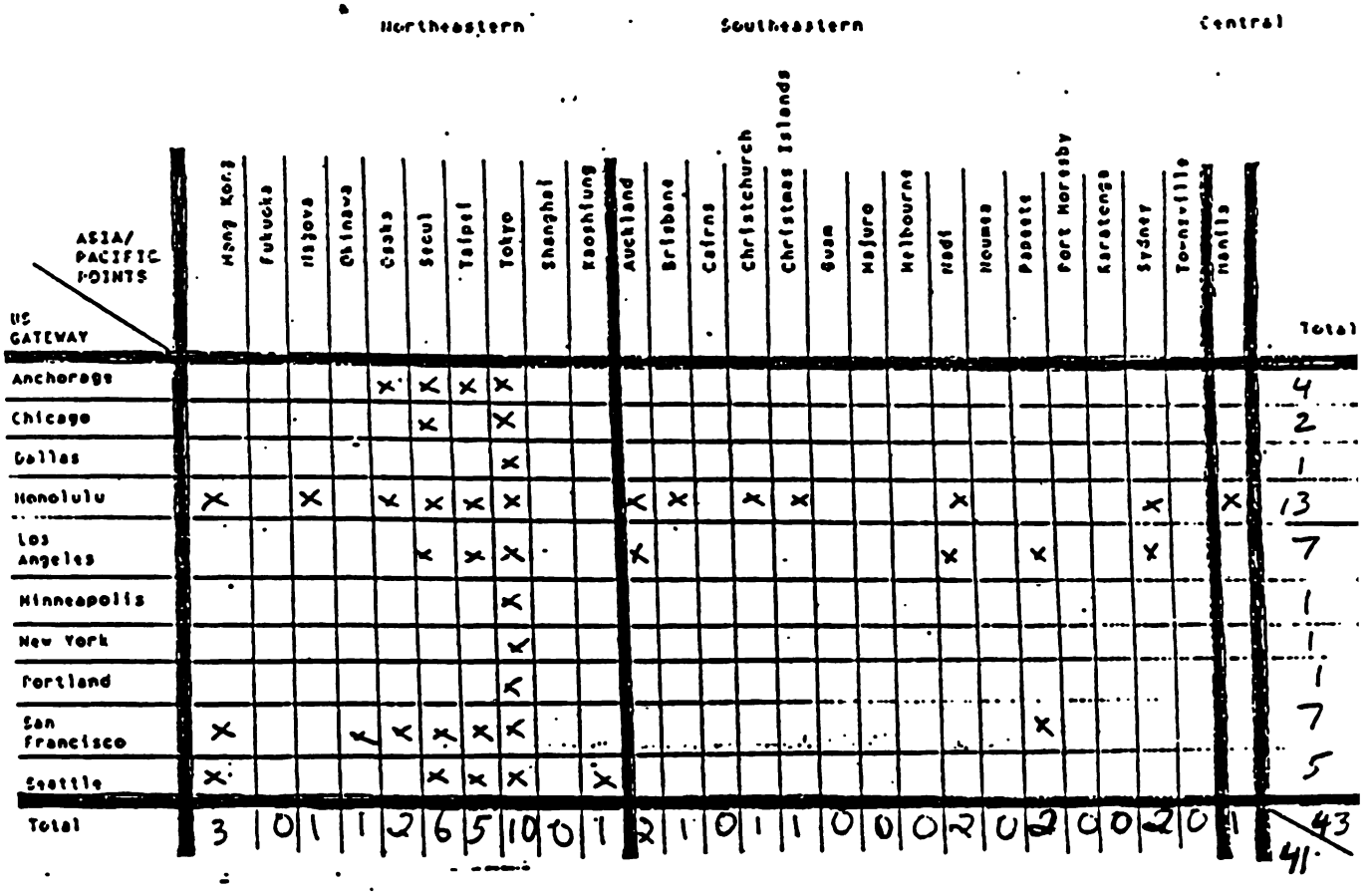
1986



SOURCE: ICAO, Traffic by Flight Stage(Montreal: ICAO, August 1986).

NONSTOP SERVICES BETWEEN US GATEWAYS AND POINTS IN THE ASIA/PACIFIC REGION

1987



SOURCE: ICAO, Traffic by Flight Stage(Montreal: ICAO, August 1987).

Appendix 3

THE DEVELOPMENT OF PASSENGER SEATS AVAILABLE FROM US GATEWAYS TO ASIA/PACIFIC DESTINATIONS FROM 1977 TO 1987

US GATEWAY\YEAR	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Anchorage	335964	181746	444546	314202	489192	513527	448400	446066	546011	434708	313912
Chicago	43950	56313	68676	66252	79164	102678	125867	119133	112400	162864	198487
Honolulu	1343718	1198419	1779534	1736256	1886782	1836040	1786064	2085496	2174266	2208509	2433718
Los Angeles	266658	286782	436008	440862	637404	796557	690887	875522	980974	1141282	1213012
Minneapolis	0	0	0	0	0	1038	660	1890	1311	0	732
New York	95736	94368	90384	99504	109752	137003	202906	270771	297842	349654	362848
Portland	0	0	0	0	0	0	15048	18723	17935	19814	63966
San Francisco	324450	306816	337260	244600	341228	356070	374757	410877	485116	575325	724448
Seattle	127980	127890	162912	231204	242496	265770	407901	551974	485883	616991	577774
Total	2538456	2252334	3319320	3132888	3786018	4008683	4051990	4779952	5101738	5509147	5888892

* 0 indicates that there was no service by an airline

SOURCE: ICAO, Traffic by Flight Stage (ICAO: Montreal, 1977-1987).

Appendix 4

THE DEVELOPMENT OF REVENUE PASSENGERS CARRIED FROM US GATEWAYS TO ASIA/PACIFIC DESTINATIONS FROM 1977 TO 1987

US GATEWAY\YEAR	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Anchorage	190632	116838	276384	197838	319494	353449	311444	331507	407630	307886	236641
Chicago	24246	37890	51534	52336	60630	69266	83018	84417	85807	120078	126315
Honolulu	784074	851004	1253488	1104876	1289724	1179644	1144828	1394342	1512702	1535346	1215464
Los Angeles	135814	183888	237052	273108	389592	477585	452543	558653	701297	722865	828443
Minneapolis	0	0	0	0	0	433	350	1020	660	0	303
New York	44172	74556	60114	56118	70428	82442	137573	194736	711557	231923	250020
Portland	0	0	0	0	0	0	3531	7119	7071	7007	22724
San Francisco	171540	180960	204966	156996	164988	199769	225047	123469	299862	376816	469982
Seattle	54654	64044	88242	139332	192480	169708	224498	328628	334941	348427	341636
Total	1405132	1509180	2171980	1980604	2487336	2532296	2582832	3023586	3561527	3650348	3491528

* 0 indicates that there was no service by an airline.

SOURCE: ICAO, Traffic by Flight Stage (ICAO: Montreal, 1977-1987).

Appendix 5

PERCENTAGE SHARE OF INDIVIDUAL US GATEWAYS OF TOTAL TRANSPACIFIC SEATS AVAILABLE FROM 1977 TO 1987

US GATEWAY\YEAR	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Anchorage	13.2	8.1	13.4	10	12.9	12.8	11.1	9.3	12.2	9	6.7
Chicago	1.7	2.5	2.1	2.1	2.1	2.6	3.1	2.5	2.5	3.4	4.2
Honolulu	53	53.2	53.6	55.4	49.8	45.8	44.1	43.6	34.5	31.8	26.6
Los Angeles	10.5	12.7	13.1	14.1	16.8	19.9	17.1	18.3	22	23.6	25.8
Minneapolis *	0	0	0	0	0	0	0	0	0	0	0
New York	3.8	4.2	2.7	3.2	2.9	3.4	5	5.7	6.7	7.2	7.7
Portland	0	0	0	0	0	0	1.2	1.5	1.4	1.4	1.4
San Francisco	12.8	13.6	10.1	7.8	9	8.9	9.7	8.6	10.9	11.9	15.4
Seattle	5	5.6	4.9	7.3	6.4	6.6	10.1	11.5	10.9	12.8	12.3
Total **	100	100	100	100	100	100	100	100	100	100	100

* Minneapolis became a gateway in 1982. Its share is not listed since it is less than 1 percent.

** Total does not equal 100 due to rounding.

SOURCE: Calculations based on Traffic by Flight Stage, 1977-1987.

Appendix 6

PERCENTAGE SHARE OF INDIVIDUAL US GATEWAYS OF TOTAL REVENUE PASSENGERS CARRIED FROM 1977 TO 1987

US GATEWAY\YEAR	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Anchorage	13.5	7.7	12.7	10	12.8	14	12.1	11	11.4	8.4	6.8
Chicago	1.7	2.5	2.4	2.6	2.4	2.7	3.7	7.8	7.4	3.9	3.6
Honolulu	55.8	56.4	57.7	55.8	51.9	46.6	44.3	46.1	42.5	42.1	34.8
Los Angeles	9.7	12.2	11	13.8	15.7	18.9	17.5	18.5	20	20	23.7
Minneapolis *	0	0	0	0	0	0	0	0	0	0	0
New York	3.1	4.9	2.8	2.8	2.8	3.2	5.3	6.4	5.9	6.3	7.2
Portland	0	0	0	0	0	0	0	0	0	0	0
San Francisco	12.2	12	9.4	7.9	6.6	7.9	8.7	4.1	8.4	10.3	13.5
Seattle	3.9	4.2	4.1	7	7.7	6.7	8.7	10.9	9.4	9.5	9.8
Total **	100	100	100	100	100	100	100	100	100	100	100

* Minneapolis became gateway in 1983. Since its share is less than 1 percent it is notlisted.

** Total does not equal 100 due to rounding.

SOURCE: Calculations based Traffic by Flight Stage, 1977-1987.

REFERENCE LIST

Air New Zealand. 1984. Air New Zealand Annual Report 1984. Auckland: Air New Zealand.

----------. 1988. Air New Zealand Annual Report 1988. Auckland: Air New Zealand.

Aviation Law Reporter. 1989. CAB, DOT, NTSB Cases from 1979 to 1989. The Pacific Division Transfer Case (Docket No.43065, Order 85-11-67). Chicago: Commerce Clearing House Inc..

Avmark Aviation Economist. 1985. The most important factors in choosing an airline. December, 17.

----------. 1986. The magical allure of the Orient. November, 15.

----------. 1989. The Tianamen fall-out. September, 14.

Balsley, Howard. 1978. Basic Statistics for Business and Economics. Columbus, Ohio: Grid Inc..

Boberg, Kevin B., and Frederick M. Collison. 1989. International Trends in the Pacific Basin. Transportation Journal 3 (Spring 1989): 26.

Civil Aeronautics Board (CAB). 1977. Atlanta-Charleston Competitive Nonstop Case (Docket No. 30309). Washington, D.C.: CAB.

Davies, R.E.G..1988. Pan Am - an airline and its aircraft. New York: Orion Books.

Doganis, Rigas. 1985. Flying Off Course. London: George Allen & Unwin.

Flint, Perry. 1987. Korean Air: Riding the tiger. Air Transport World. October, 26.

French, Trevor. 1989. Seoul searching. Airline Business. December, 27.

Fruehan, William E., Jr.. 1972. The Fight for Competitive Advantage. Boston: Harvard University.

Gragg, Dan. 1983. The Guide to Military Installations. Harrisburg, Pennsylvania: Gale Inc..

Gidwitz, Betsy. 1980. The Politics in International Air Transport. Lexington, Massachusetts: D.C. Heath & Company.

Handelsblatt (Duesseldorf). 1986. US Carrier will in wenigen Jahren Nummer 1 auf Transpazikik werden [US carrier wants to be number 1 on transpacific in a few years]. 22 April.

Hara, Nabuko. 1987. Home first, the world later. Airline Business. November, 27.

Harrington, Tony. 1989. Global hubbing. Airline Business. June, 13.

International Civil Aviation Organization (ICAO). 1977. International Air Passenger And Freight Transport: Asia and Pacific. Montreal: ICAO.

----------. 1977-1987. Civil Aviation Statistics of the World. Montreal: ICAO.

----------. 1977-1987. Traffic by Flight Stage. Montreal: ICAO.

International Herald Tribune (Paris). 1987. United flies into trouble in Pacific. 19 February.

Journal of Commerce. 1986. United targets growth in South Pacific. June.

Jouzaitis, Carol. 1986. United works to make new Pacific routes pay. Journal of Commerce (March).

Learmount, David. 1987. Qantas - safety & monopoly. Flight International. December, 23.

Loyd's Aviation Economist. 1986. South Korea - a new market opportunity. April, 17.

----------. 1986. Deep rooted causes for current crisis. June, 27.

Lyon, W. Mark. 1988. Rapid growth on Pacific routes could reduce yields. Airline Executive. January, 7.

----------. 1989. Pacific rim carriers meet the threat of protectionism. Airline Executive, December, 27.

Mosteller,Dee. 1983. Philippine Airlines gains slow, steady turnaround. Air Transport World. March, 61.

Northwest Airlines. 1985. Northwest Airlines Annual Report 1985. Minneapolis: Northwest.

Nuutinen, Heini. 1988. Capitalizing on boom in inbound tourism. Avmark Aviation Economist. September, 14.

Official Airline Guide (OAG). 1977-1987. Worldwide Edition. Oak Brook, Illinois: OAG.

Pan Am. 1984. Pan Am Annual Report. New York: Pan Am.

Qantas. 1984. Qantas Annual Report 1983-1984. Sydney: Qantas.

----------. 1985. Qantas Annual Report 1984-1985. Sydney: Qantas.

----------. 1988. Qantas Annual Report 1987-1988. Sydney: Qantas.

Rodger, Ian. 1989. The mighty yen. Airline Business. May, 35.

Saccoccio, Marjorie, Reports Officer at the Department of Transportation's Center for Transportation. 1990. Interview by author, 15 May, Cambridge, Massachusetts.

Shaw, Stephen. 1988. Airline Marketing and Management, 2nd ed. Malabar, Florida: Robert Krieger Publishing Co. Inc.

Singh, Praveen. 1985. Some aspects of Australia's air service agreements. Air Law 2, 72-74.

Taneja, Nawal K.. 1988. The International Airline Industry. Lexington, Massachusetts: Lexington Books.

Tokyo Business Today. 1986. Low fare strategy not on the cards. 5 June.

United Airlines. 1985. United Airlines Annual Report. Chicago: United Airlines.

----------. 1986. United Airlines Annual Report. Chicago: United Airlines.

----------. 1987. United Pacific Division Accomplishments. Chicago: Pacific Division of United Airlines.

----------. 1988. United Airlines Fact Book. Chicago: United Airlines.

US Department of Commerce. Bureau of the Census. 1985 and 1988. Statistical Abstract of the USA. Washington, D.C.: Government Printing Office.

US Congress, House. 1979. The International Air Transportation Competition Act of 1979. Pub. L.. 94 Stat. 42. 17 December.

US Department of Transportation (DOT). 1979-1987. US International Air Travel Statistics. Cambridge, Massachussetts: DOT.

----------. 1988. Study Of Airline Computer Reservation Systems. Washington, D.C.: Government Printing Office.

Wernet, Max. 1988. Quality in Luftverkehr - Bedeutungs-wandel durch Wettbewerb [Quality in aviation - a change in meaning by competition], Lufthansa Yearbook 1988. Cologne: Deutsche Lufthansa AG.

Whitaker, Richard. 1987. United We Stand? Airline Business. July, 25.

Woolsey, James P.. 1987. Air New Zealand facing new challenges at home. Air Transport World. June, 58.

Zero Population Growth Inc..1988. USA by numbers. Washington, D.C.: Zero Population Growth Inc..