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IMPORTANCE OF CIVIL AIR TRANSPORT
TO THE INDIAN ECONOMY

By

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ABSTRACT (within 250 words)

Civil air transport cannot be viewed as merely a system of moving people and goods from one place to another. (The purpose of this study is to aid civil aviation policy makers, legislators and members of the public in gaining better understanding of the economic ramifications of civil air transport.)

The study, made for the Indian Airlines, seeks to define and, wherever possible, to quantify the important economic impact of civil aviation in relation to (1) employment and income multiplier, (2) foreign exchange and trade benefits, and (3) technological and unquantifiable spin-off.

The major findings based on the paper are highlighted in Table A.

Table A

Highlights of Civil Aviation Direct-plus-Indirect
Benefits to India in 1968-69

- * 5% of India's work force employed
- * Rs.316 crores of incomes generated
- * Rs.180 crores worth of gross foreign exchange generated
- * 5500 persons domestically carried daily
- * 82% of foreign visitors brought

The contribution of civil air transport to the twentieth century progress is substantial and significant. A country that does not meet the challenge and maximise the benefits, excludes itself from the process of world revolution.

The paper will attempt to specify and quantify the impact of the civil air transport on the Indian economy in terms of employment, incomes, expenditures, foreign exchange earnings, trade and exports, communication and commerce technological spin-off and other unquantifiable advantages.

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IMPORTANCE OF CIVIL AIR TRANSPORT TO THE INDIAN ECONOMY

report prepared for
Indian Airlines

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Importance of Civil Air Transport to the Indian Economy

This report presents briefly some of the major economic benefits brought by civil air transport to India. The study was undertaken by Indian Institute of Management, Ahmedabad at the request of Indian Airlines.

To highlight some of the findings, the civil aviation in India in 1968-69, accounted for:

- 5% of Indian work force employed
- Rs. 1,500 million of incomes generated
- Rs. 367 million of other expenditures incurred
- Rs. 893 million worth of gross foreign exchange earned
- 2.2 million passengers domestically carried
- 82% of foreign visitors brought

Contribution of civil air transport to the twentieth century is substantial and significant. Civil aviation has become an essential component of a country's development, not only on account of the communicational, commercial and technological services it renders, but also on account of the employment it directly and indirectly promotes, the incomes and expenditures it generates throughout the economy, the resource mobilization and investment it facilitates, the foreign exchange it earns and the trade

advantages it makes available to the country. The benefits of the civil air transport are so apparent that it is difficult to think of a progressive nation without a network of airlines, airports and related infrastructure. A country that does not meet the challenge and maximize the benefits,excludes herself from the process of world revolution.

The sections that follow present the impact of the civil air transport on the Indian economy in terms of employment, incomes, expenditures, foreign exchange earnings, trade and exports, communication and commerce, technological spin-off and other unquantifiable advantages.

2. Employment Generated by Civil Air Transport and Related Industries in the Indian Economy:

Civil air transport in India generates employment for a large number of people, considering not only the jobs it provides in the airlines and government, but also the jobs it creates in related industries like hotels, restaurants, taxis, tourist shops, guides, travel agencies etc., and the jobs it supports in industries from which it makes purchases.

An estimated 782,000 people are directly and indirectly employed in the civil air transport and related industries. These

account for about 5% of the total Indian work force.

Atleast 155,000 of the estimated total work force of 782,000 are directly engaged in the civil air transport and related industries. In addition, secondary and service industry employment is estimated at 57,000 and 570,000 respectively. The details of these data are given in the following table.

Table 1
Estimate of the Number of jobs Created
Directly and Indirectly by Civil Air Transport
1968

	Primary Employment	Secondary ₂ Employment	Service ₃ Employment	Total Employment
Airlines	23,500	8,500	86,000	118,000
Government	14,500	5,500	54,000	74,000
Service Sectors ¹	6,000	2,000	22,000	30,000
Hotels, Catering etc.	88,000	33,000	325,000	446,000
Car hire	18,000	7,000	66,000	91,000
Travel and Air Cargo Agencies	4,500	1,500	17,000	23,000

¹ These data include the employment attributable to civilian transport in industries and organizations servicing the civil aviation sector

² Based on secondary employment factor of .375 per primary employee

³ Based on service employment factor of 2.68 per primary and secondary employee.

Total Indian population supported by the primary, secondary and service work force of 782,000 persons in the civil air transport sector is in the order of 39,00,000 taking into account average household size.

The contribution of Santa Cruz airport at Bombay is in itself significant as is revealed by the comparison of the number of persons engaged at Santa Cruz airport and that at two of the foremost airports in the world.

Table 2

Estimates of Employment Attributable to Airports - 1968-69

	Santa Cruz Bombay	Heathrow London	J.F. Kennedy New York
Total employees	11230	42000	42500
Airport Authorities	11.6%	4.8%	1.8%
Airlines	72.5%	76.3%	71.2%
Concessionaires	1.3%	9.1%	6.1%
All Others	15.6%	9.8%	20.9%

Employment multiplier effect of civil air transport in India is worth mentioning. To take a few examples, atleast 9000 cars and cabs visit Santa Cruz airport every day. First class hotels, which

mostly cater to air travellers, in turn promote employment in small, medium, and farm industries - Oberoi Hotels shop from 986 small industries; poultry vegetables, handlooms, carpets, pottery paints, even salt. No body ever invested in airlines with an idea of supporting artists, but Air India is the largest single supporter to painters in India.

3. Indian Incomes and Expenditures Generated by Civil Air Transport:

A considerable and growing flow of expenditures has emanated from the civil air transport in India. This flow has had a wide impact on incomes and expenditures in the country, mainly through employment in airlines and airports themselves and in industries supplying goods and services to them and to their passengers, but also through the successive re-spending of incomes, or the multiplier effect. In addition, there have been substantial contributions to the infrastructure of the country by means of investment in fixed capital assets, payment of taxes and insurance and other savings.

Indian Airlines and Air India together spend 36% of their total expenditure on staff payments and allowances. Earnings of airlines and government employees in India were some Rs.252 million in 1968. In addition, employment directly generated by purchases of airlines and their passengers in certain industries (particularly

aviation service sectors, hotels and catering, travel agents, and car hire) brought an estimated income of Rs.240 million. In some first class hotels, incomes from air travellers amount to as high as 95% of their turnover, while in travel agencies 80% of the business is accounted for by air travellers.

Total staff payments directly attributable to civil air transport accordingly were Rs.492 million. These data are shown in greater detail in table 3.

Table 3

Incomes and Other Staff Payments in India
Resulting from Civil Air Transport
1968 (Rs. million)

	Airlines and Government	Employees whose income is attributable to air transport ⁽¹⁾	Total
Total Staff Payments	251.7	240.0	491.7
Provident Fund Contributions	13.1	8.7	21.8
National Insurance Contributions	4.4	..	4.4
Tax Payments	18.8	2.4	21.2
Net Take Home Pay	215.4	228.9	444.3

(1) In the civil aviation service sectors, hotels and catering services, car hire, travel agencies and air cargo agencies.

The 'income multiplier' process whereby re-spending of incomes generates further income is estimated to add Rs.492 million in secondary incomes (the value of the multiplier being estimated at 3.05) producing a total of Rs.1500 million.

Over and above the payments of wages and salaries to the staff and contribution to national insurance and taxes, airlines, of course, incur substantial expenditure in other sectors of the economy, which is further enhanced through the multiplier effect. The direct expenditure in India, other than the staff payments, of Indian Airlines and Air India combined was about Rs.367 million in 1968-69. The data on this expenditure indicate the range of activities through which civil aviation affects the economy. These data are shown in table 4.

Table 4

Major Indian Expenditure of IA and AI (combined)
Other Than Staff Payments
1968-69
(Rs. million)

Rents	..	...	8
Insurance	..	...	26
Interest	..	...	31
Excise Taxes	..	...	72
Fuel Costs ⁽¹⁾	97
Landing Charges	..	...	18
Food Service	..	...	17
Marketing	..	...	4
Engineering	..	...	50
Agencies Payments		...	22
Other Expenses ⁽²⁾	23
TOTAL	..	...	<u>368</u>

(1) Excluding Excise Taxes

(2) These data include expenses on utilities, communication, staff welfare, materials consumed, etc.

4. Foreign Exchange Earnings Through Civil Air Transport:

Civil air transport makes an important contribution to earning foreign exchange for India. Airlines earn foreign exchange directly through foreign passenger traffic and freight traffic. In addition, by facilitating foreign tourists to visit India and travel within India they also generate foreign incomes throughout the economy, like in hotels, travel agencies, tourist cars, guides, handicrafts stores, tourist shops, etc.

Gross external earnings of Indian Airlines totalled Rs.746.4 million in 1969. As against this Rs.75 million worth of foreign exchange was earned by foreign airlines in India. Foreign visitors spent approximately Rs.320 million. Thus the overall foreign exchange earnings attributable to civil air transport accounted for Rs. 991.4 million in 1968. These accounted for an increase of approximately 68% over that in 1966.

Table 5

Gross Foreign Exchange Earnings Stemming From
Civil Aviation and Related Activities
1965 - 1969
(Rs. million)

	1965	1966	1967	1968	1969
Airlines					
Passenger Revenue	240.2	351.7	459.3	494.2	546.3
Freight Revenue	74.0	122.4	126.3	142.9	158.4
Other	21.0	28.0	33.4	34.1	41.7
Total	335.2	502.1	619.0	671.2	746.4
Foreign Airlines' net earnings in India	..	- 66.	- 94.	- 77.	- 75.
Estimated Expenditure of Air Visitors to India	120.2	154.7	190.2	222.0	320.0

Comparison of external earnings from civil air transport over years indicates the high potential contribution this sector can make to strengthen India's balance of payments position in future.

In the tourism sector, of the total 244,724 foreign tourists that visited India in 1969, 204,039 or 82% tourists came by air. Most of the tourists travelling by air, or about 68%, came from USA, UK and other European countries, and another 20% from Africa

and Australia. American and Russian tourists spent in India an estimated amount of Rs. 1750 on average, while Europeans Rs. 1450. The tourists spent at least 40% of their expenses on hotels and food and another 30% on shopping.

Apart from the foreign exchange earnings of Rs. 222 million from foreign visitors travelling by air, the expenditure of these tourists generated further rounds of expenditure in the Indian economy. Of these tourists, about 65%, came for holidays and for visiting friends and another 25% for business. Not only did the tourism boost the flow of dollars and other foreign currencies into India, but through multiplier process it can also be estimated to have caused additional expenditure flow of Rs. 455 million (the value of multiplier being calculated at 3.05). Thus the total expenditure, direct and indirect, resulting from overseas tourists and business visits amounted to about Rs. 677 million in 1968.

5. Trade Advantages of International Air Transport to India:

Civil air transport not only brings foreign exchange earnings to the country, but also facilitates exports and foreign trade. In 1967, more than 500 million rupees worth of Indian exports were air-lifted, which represented 4.3% of India's total exports. With the introduction of jumbo jets, the air-lifted cargo is expected to increase significantly.

Air cargo exports from India doubled between 1954 and 1960 from 1400 tons to 2900 tons, again between 1960 and 1966 from 2900 tons to 5800 tons, and still again between 1966 and 1969 from 5800 tons to 12000. These data are shown in table 6.

Table 6
Growth of Air-lifted Exports from India
1954 - 1969

Year	Exports by Air Tons
1954	1400
1958	2050
1959	2500
1960	2900
1961	3800
1962	4800
1963	5600
1964	5500
1965	5450
1966	5800
1967	7300
1968	9800
1969	12000

India's Airlines carried more than half of the air-lifted exports in 1966.

Among countries to which India exported by air, United Kingdom accounted for the largest share. Destination-wise distribution of air-lifted exports from India indicates the countries, the potentialities of exports to which can be further explored. These data are shown in table 7.

Table 7
Air-lifted Exports from India to Different Countries
1969
(Thousand Killograms)

Country	Air-lifted Exports
Afghanistan ..	710
Australia ..	285
Germany (West) ..	525
Hong Kong ..	585
Japan ..	810
Kuwait ..	545
Nepal ..	685
Thailand ..	580
U.S.A. ..	600
U.S.S.R. ..	200
U.K. ..	3,100
African Countries ..	450
Other East Asian Countries	835
Other West Asian Countries	1,080
Other European Countries	<u>1,500</u>
	12,490

Most of these exports is air-lifted from Santa Cruz Airport, Bombay. For example, in 1967, 62% of the total exports, in terms of value, was air-lifted from Bombay, 13% from Madras, 11% from Calcutta, 7% from Delhi and the remaining 7% from other smaller airports.

As a flourishing industry, air freight has also been a stimulus to trade in India. It makes it possible to export commodities which are perishable. Exports of commodities in case of which urgency of the delivery is a prime concern can be facilitated through air freight only. Besides, air freight boosts up the exports of commodities which are light-weight but precious.

Of Rs.501 million worth of exports air-lifted from India during 1967 more than half consisted of pearls and precious stones. Civil air transport has played an important role in escalating the exports of pearls and precious stones from India and thus in bringing a large amount of foreign exchange to the country. Many other commodities are also being air-lifted from India in increasing amounts and show potential for earning more foreign exchange. The value of air-lifted exports of different commodities are shown in table 8.

Table 8
 Indian Products Exported by Air
 1967

Commodity	Value (Rs. lakhs)
Pearls and Precious Stones	2,620
Movie Films	302
Human Hair and Animal Material	262
Textiles	253
Pharmaceuticals	204
Imitation Jewellery	178
Perfumes and Oils	171
Mica and Minerals	148
Others	873
Total	5,011

Civil air transport also brings other trade advantages to the Indian economy, impact of which cannot be easily quantified. Speed of delivery, which is perhaps the main advantage of air freight, allows for a number of benefits, such as reduction in investment in goods in transit, packing, insurance and warehousing, increased use of production facilities, reduction of inventory costs, etc., which can result in substantial cost savings.

Airlines make neighbourhoods out of nations. The speed of travel and the possibility of reaching distant countries facilitate visits of technical and professional know-hows to India. This is an exclusive advantage of the civil air transport which is of considerable significance to India's developing economy.

Civil air transport provides facilities and stimulus to trade missions for trade negotiations with other countries. Volume of foreign trade generated for India through trade missions travelling by air has been increasing in the recent past.

Civil air transport also stimulates business relations with other countries, as business executives are short of time and can afford to travel by air only. This also adds up to India's foreign trade. Although sizeable, these benefits are difficult to quantify.

6. Stimulus to Communication and Commerce in India Through Civil Air Transport:

The benefits brought by civil air transport in terms of communication and commerce are beyond dispute. Indian Airlines is one of the world's largest domestic airlines. It carries 5,500 passengers every day over air routes covering 33,631 kilometres. The number of passengers travelling with Indian Airlines has been increasing at the rate of 200,000 every year.

Now air routes link even the more remote parts of the country, building a wider base for India's growing economy.

Growth of air transport during the decade of 1960s is described in table 9.

Table 9

Trend of Development of Scheduled Domestic Air Services

Year	Kilometres flown Thousands	Passengers carried Number	Freight carried (tonnes) Number	Mail Carried (tonnes) Number	Revenue Tonne/Kms flown Thousands
1959	39,817	736,160	33,504	6,825	125,277
1960	41,424	855,203	38,206	6,817	146,067
1961	44,380	937,941	40,070	7,534	170,249
1962	45,204	1,032,607	37,704	8,158	191,737
1963	46,904	1,176,330	37,746	9,101	220,260
1964	49,024	1,388,753	32,516	9,977	254,607
1965	47,986	1,414,784	26,334	10,524	262,065
1966	49,782	1,548,919	21,259	10,512	272,205
1967	56,087	1,829,489	23,693	11,184	316,507
1968	60,047	2,108,229	25,394	11,691	353,263
1969*	66,590	2,499,200	30,759	12,096	417,635

*Estimates

Growth of traffic at some of the major airports is shown in table 10.

Table 10

Growth of Traffic on Domestic Air Services in India

	Passengers Flown (million Kilometres)			Cargo Carried (Million tonne Kilometres)		
	1966	1967	1968	1966	1967	1968
Bombay	488	561	603	10	11	11
Calcutta	221	232	262	4	4	4.2
Delhi	300	337	401	4.4	4.8	5.6
Madras	-	46	67	-	.6	.9

Along with the growth of air traffic in India, airports are also developing fast. To meet the traffic explosion, older planes are being replaced by jet planes and ground landing is progressively being mechanized. Different parts of India are gradually being covered by a comprehensive network of air routes and aerodromes. In 1969, the number of airports in India reached a total of 252. These data are shown in greater detail in table 11.

Table 11
Network of Aerodromes in India
1969

Number	Condition
85	maintained by Directorate General of Civil Aviation
32	privately owned and maintained, licensed aerodromes
62	State Government aerodromes maintained in serviceable conditions
73	State Government aerodromes not necessarily maintained in serviceable conditions
<hr style="width: 10%; margin-left: 0;"/>	
Total	252

7. Technological "Spin-off" of Civil Air Transport:

Apart from the services the civil air transport directly renders to the economy, it also creates many other technological facilities and infrastructure which are of substantial use to other industrial sectors. The higher and more advanced state of technology that "spin-off" to other sectors of the economy is in itself a considerable benefit for the country brought by the civil air transport.

One of the most important of these technological "all-outs" is the network of telecommunications that Indian Airlines operates throughout the country. The aeronautical telecommunication service plays its role in the process of consolidation and further progressive development.

Another important technological "spin-off" of civil aviation is the network of meteorological observatories and the provision of weather services. As of December 1969, there were, for civil aviation, 6 main meteorological offices, 12 dependent meteorological offices, 14 supplementary meteorological offices, 44 current weather observatories and 4 meteorological watch offices serving 4 flight information regions and attached to the 4 international airports. The scientific and service activities of the meteorological centers make available information regarding weather conditions and rainfall in all different parts of the country. Moreover, they provide warnings against adverse weather such as cyclones, heavy rainfall, gales, frost, eclipse etc. Such information is of much value to several sectors of the economy, especially irrigation, agriculture, railways, telegraph, public works construction and fisheries departments - not to mention the mountaineering and similar institutes.

Research and development activities connected with civil aviation are also closely related with radio communication, satellite and space research, climatology and so on.

With the entering of Indian Airlines and Air India into the computer age, a vast network of computer system would be established

throughout the country. Benefit of this infrastructure to other industries and to general public at large could be spectacular. Indian Airlines, which introduced computer systems in 1969, contemplates to step up this investment to as high as Rs. 8 crores. Air India also envisages an expenditure of similar amount on computer set-up. The civil aviation sector is heading towards becoming one of the largest users of computer services in India, with computer centers spread in all major cities of the country. The "spin-off" of this greatest technical development of modern times, to other economic sectors could be hardly underestimated.

The technologies required in manufacturing and maintaining innumerable parts of an aircraft, which have to be especially light-weight, compact, dust proof, weather proof, flame-resistant etc. obviously generate substantial benefits for other industrial sectors.

8. Unquantifiable Advantages of Civil Air Transport to Indian Economy:

The full impact of civil air transport to the Indian economy cannot be measured quantitatively. Many of the benefits of civil aviation are significant and obvious, but they are integrated with the process of development and therefore difficult to specify. However, they are certainly worthy of mention.

The system of airlines places the country in a much sounder strategic position and consequently creates a stimulating climate for business.

Besides, civil air transport has created opportunities for growth of industries in many cities, Poona or Baroda for example, which might have otherwise lacked incentive or impetus to expand. Civil aviation has also created demand for new products and services.

But for Indian Airlines, it would be difficult to carry out business and other communications with remote parts of India. This is especially true for the far-eastern part of the country, Gauhati for example, which is separated from the rest of the country by Pakistan. Civil aviation in India also activates tourist centers, Agra, Jaipur and Srinagar for example, and especially facilitates projection of Indian cultural heritage to foreigners. There are a host of benefits to be derived from the swift and easy movement provided by air transport including international, cultural and technological exchange made possible, as well as political interaction made convenient.

Airlines make the country they pass through. Civil air transport has a great potentiality of bringing increasing benefits to India's growing economy.

Summary

Civil air transport is an essential and productive sector of the Indian economy. The economic benefits brought by civil air transport and related industries in terms of employment, incomes and expenditures, foreign exchange earnings and international trade, have been examined and are found to be positive and substantial for the Indian economy.

Overall contribution of civil air transport to the Indian economy, taking all aspects together and considering the multiplier effect was in excess of Rs. 2700 million. This is shown in table 12. This amount would have been even higher, had it been possible to figure out the multiplier effect of incomes, expenditures and investments that occur in the secondary and service companies indirectly involved in the civil air transport industry.

Table 12

Contribution of Civil Air Transport and
Related Industries to the Indian Economy
1968
(Rs. million)

Incomes and Staff Payments ⁽¹⁾	1500
Expenditures ⁽²⁾	367
Purchase of assets ⁽²⁾	185
Expenditures of foreign visitor arriving by air ⁽¹⁾	677
TOTAL	2729

(1) Multiplier effect included

(2) Multiplier effect unknown

Civil air transport is important to Indian economy, in terms of India's foreign trade and foreign exchange earnings also. These findings are summarised in table 13.

Table 13
Contribution of Civil Air Transport
to India's Foreign Trade
1968
(Rs. million)

Foreign Exchange Earnings	
(1) Airlines	671
(2) Air visitors	222
Total	893
Exports by air	501

Contribution of civil air transport to the Indian economy is vital and irreplaceable. Apart from the indispensability of a system of airlines, the economic advantages reaped from the civil aviation indicate the desirability for a rapid growth of civil air transport in India.

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