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A Study on the Factors that Lead to the Satisfaction in the Usage of Infrastructure at the Coimbatore Airport

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The urgency to develop the logistics infrastructure in India has been realized in the past decade, the task at hand is still daunting. India's logistics is insufficient and ill-equipped. It is also ill designed to suit the requirements and support the growth rates of the sub-continent. India should pursue a logistics infrastructure strategy that minimizes investment, maximizes cost efficiency reduces losses for users and is energy efficient. If the factors that lead to the satisfaction of the passengers is understood then it becomes an easy task to develop the grey areas. The Indian airports have a long way to go to compete with the Aviation infrastructure of the other countries. Airports of the western countries are equipped to handle any kind of an emergency at any given point of time. Taking into consideration the investment requirement and the policy standardization it is quit clear that the Indian airports need more than privatization. It needs timely implementation (whether the Government does it or the private parties' do it is not important) but it is important to cash in on the situation. It is also important that an airport should be looked at an integral part of the aviation industry.

Keywords*-Infrastructure development, Aviation sector, Operational Satisfaction, maintenance satisfaction*

INTRODUCTION

Infrastructure development is a critical enabler to economic growth. Logistics infrastructure, covering the road, rail, waterways and air network of a country is the backbone on which the nation marches ahead. Although the urgency to develop the logistics infrastructure in India has been realized in the past decade, the task at hand is still daunting. India's logistics is insufficient and ill-equipped. It is also ill designed to suit the requirements and support the growth rates of the sub-continent. India should pursue a logistics infrastructure strategy that minimizes investment, maximizes cost efficiency reduces losses for users and is energy efficient.

A large part of the future logistics network in India is still to be built. The country still has an opportunity to build it optimally, to meet the ever growing demand. An integrated and co-operated approach is vital to realize the fullest potential of the Indian logistics industry in general and the aviation industry in particular.

Achieving good results in the aviation sector is not the question of building new airports and creating newer infrastructure. It is also about developing the existing infrastructure to match the needs and initiating better utilization of existing assets.

In order to realize the above, four major shifts are required in the field of aviation

i) Building the right aviation network and ensuring the flows on the right mode

ii) Creating enablers to maximize the efficient use of network

iii) Extracting more from the existing assets

iv) Allocating more in the areas of Aviation and its supportive industries

A review of the past literature shows why there is a very important need to develop the infrastructure.

Sushi Shyamal, [1] explained the dire need for infrastructure development in the aviation industry to ensure the overall economic growth on a sustainable basis. If the aviation industry could sustain this growth for the next four-five years, the overall economy will get largely benefited as aviation propels growth in tourism, hospitality, real estate etc.

Sarangi, Debendranath [2] had highlighted the problems in the infrastructure development of an airport in India and he has also made an attempt to suggest a solution to these problems. One of the main problems identified is the lack of funds required to put infrastructure programmes into practice. He has also added that in India, different investment models (voluntary, coalition, and partnership) have been put into practice to deal with funding problems.

Chen, Andrew H and Kubik, Jennifer W[3] in their study found out that a lack of infrastructure development is seen as one of the leading obstacles for India in realizing its economic growth potential. Pullin, John[4] talks about the neglect of airports even in the developed nations and the impact it has on the performance of the Airport. Vast areas of infrastructure have suffered years of financial and organizational neglect.

The CRISIL INFAC Analysis[5] report pointed out the emphasis that the union budget 2004-2005 laid on various infrastructure sectors such as airports, railways and SEZs. The report also talks about setting up of inter-institutional group for development of infrastructure which will ensure a focused lending approach and speedier project

approval process which will aid timely completion of projects in this sector.

Darpan [6] pointed out that poor airport infrastructure, abused security procedures and long lines at security, little or no information in the event of delays, lousy toilets and signage are at the Chennai airport. Kakkare, Ashwini[7] has given a thorough analysis about the surge of the aviation sector and the growth of the tourism industry is highlighted here. She has stated facts and figures relating to the same. The tourism industry is a great revenue earner for the aviation industry as well. These two industries compliment each other's growth very well.

Out of the existing airports the Coimbatore airport is a revenue generating airport next to the Chennai airport. If there is a strong move for privatization of the airports in India, the small domestic airports are going to help the other airports sustain.

Coimbatore is known as the Manchester of South India due to the concentration of textile mills. The city of Coimbatore is located on the North Western part of the state of Tamilnadu. With a population of eleven lakhs, the city of Coimbatore is the gateway to Kerala, Munnar and Ooty. It is the most industrialized city next to Chennai. The city boasts of multi-specialty hospitals and prestigious and well renowned educational institutions. The World Tamil Classical meet was conducted in the city of Coimbatore between June 23rd 2010 and June 27th 2010. The airport is located in Peelamedu. The airport is a model airport with few international airlines operating. The Coimbatore airport is about 12 kms from the city center. The Coimbatore airport is a model airport –which means that it is in the category of Domestic airport with few international flights operating few international destinations. The Coimbatore airport has tie-ups with the Ministry of Tourism to For the purpose of analysis the airport is divided into functional and facilitation side.

Functional Side	**Facilitation Side**
Air Traffic Control	Terminal Building
Fire Station	Airside
Motor Transport	City Side
Communication	
Meteorological	

Air Traffic Control Division - In the Functional side, in the Air Traffic Control Division a total of 22 Infrastructural facilities are available out of the listed 37 facilities. However the non availability does not have an effect on the functioning of the department as such. There are three facilities that are inadequate in the ATC division. This inadequacy stresses the employees but it does not have an effect on the functioning of the ATC. All the available facilities either have a moderate or high usage.

Fire Station - The Fire station is a very important department in the airport. If there is an inadequacy in the number of fire staff then the airside has to remain closed until the required number of staff report for duty. Almost all the facilities listed are available with the fire station at Coimbatore Airport. The only facility that is not available in the Fire station is the photo copier machine. This inadequacy does not have an impact on the direct working of the fire station. Except for four facilities that are available, the majority of the available infrastructural facilities enjoy high usage. The only infrastructural facility that is inadequate is the hose binding machine.

Motor Transport - The Motor Transport Department of the Coimbatore airport purchases and maintains all the vehicles that are in the Coimbatore airport. The infrastructural facility that is inadequate with the MT department is the jeeps that are used in the terminal building and fork lifts that are used in the Cargo Complex. This inadequacy does not have a direct impact on the functioning of the Department.

Communication Department - All the CNS equipments used by the ATC are provided by the Communication department. There is a non availability of the Conventional VOR and Keyers. However, there is no impact on the working of the Airport because of this non availability of the infrastructural facility.

Meteorological Department - The Meteorological department provides all the services relating to weather forecast for smooth landing and take-off of the aircrafts. There is no inadequacy of infrastructure in the MET department. The maintenance of all the infrastructural facilities is done by the MET department staff that is constituted by the Central Government.

The general maintenance in the functional side of the airport is done on a daily/weekly/fortnightly/monthly /annual basis. There are skilled workers in the respective departments to do the maintenance work. This maintenance is called preventive maintenance. However trouble shooting maintenance is done as and when required.

The facilitation side of the airport was divided into three and the findings of the analysis on the facilitation side are given below.

Terminal Building - The infrastructural facilities in the terminal building are used by the Passengers and the Airline operators. The terminal building is spread over 4076 square meters of area. Out of the listed facilities, 28 facilities are available in the Coimbatore airport. The usage of the facilities is spread between low and high utilization. All the available facilities are adequately available. There is no inadequacy of available infrastructure. There is congestion in the Airport terminal building when

there are more than two flights operating at the same time. The operation and maintenance of the infrastructural facilities at the terminal building is done by semi-skilled workers on a regular basis.

Airside - The infrastructural facilities at the airside are used by the airline operators and the AAI staff. All the essential facilities are adequately available in the Coimbatore airport. But there are some optional facilities that are not available in the airside of the airport. These facilities include night parking facilities and automatic parking facilities. The non availability of these facilities does not pose a serious threat to the working of the Coimbatore airport as of now. But in due course of time when there are more number of flights which operate in the night also then this non-availability must be viewed seriously. The operation and maintenance of the infrastructural facilities is done by the skilled staff of the AAI. Some of the facilities at the airside are used by the airlines as well.

City side - The infrastructural facilities at the city side are used by the passengers and visitors. There are a lot of facilities that are not available in the Coimbatore airport. Out of the sixteen important facilities only seven are available in the city side.

The available facilities are Car parking, Coffee shop, taxi stand, Toilets, water joints, Tea/Coffee vending machines and ATM. All the available facilities are adequately available and enjoy high or moderate usage. Certain facilities that would have had more usage if available in the city side of the airport are made available only inside the terminal building. The maintenance of the city side infrastructure is done by semi-skilled AAI staff.

The general maintenance in the facilitation side of the airport is done on a daily/weekly/fortnightly/monthly /annual basis. This maintenance is called preventive maintenance. However trouble shooting maintenance is done as and when required.

The correlation between the three individual groups of infrastructure buildings, equipments and amenities is identified and since they had positive correlation among themselves the path analysis was done. The two key satisfaction levels that have been analyzed are level of satisfaction on operational aspects (OS) and level of satisfaction on maintenance aspects (MS). The group of infrastructure which contributes to the level of satisfaction on operational aspects is first identified. Similarly the group of infrastructure that contributes to the level of satisfaction on maintenance aspects is also analyzed. It is also analyzed as to which level of satisfaction, operational or maintenance contributes to the over-all satisfaction.

PATH ANALYSIS TO ANALYSE THE OVERALL SATISFACTION OF PASSENGERS

Since the independent variables (Operational satisfaction and Maintenance satisfaction) are related, which is represented in the correlation table below, the path analysis is applied to find out which independent variable influences the overall satisfaction after getting the impact of the other independent variable.

Correlation table

		Operational Satisfaction	Maintenance satisfaction
Operational Satisfaction	Pearson Correlation	1	.666(**)
	Sig. (2-tailed)		.000
	N	310	310
Maintenance satisfaction	Pearson Correlation	.666(**)	1
	Sig. (2-tailed)	.000	
	N	310	310

Operational Satisfaction

Operational satisfaction influenced by satisfaction of buildings after getting the impact of equipments;
Operational satisfaction (Y_1) = b_1*(operational satisfaction of buildings) + b_2*(Operational satisfaction of Equipments)

$$Y_1 = 0.741x_1 + 0.672x_2$$

From the above equation we can understand that operational satisfaction of the buildings influences the overall operational satisfaction after taking the impact of operational satisfaction of equipments.

Note: Similarly the other equations are given below.

Operational satisfaction influenced by satisfaction of equipments after getting the impact of amenities; $Y_1 = 0.294x_2 + 0.763x_3$

Operational satisfaction influenced by satisfaction of amenities after getting the impact of buildings;

$$Y_1 = 0.457x_2 + 0.564x_1$$

Maintenance Satisfaction

Maintenance satisfaction influenced by Satisfaction of buildings after getting the impact of Equipments; $Y_2 = 0.755x_1 + 0.301x_2$

Maintenance satisfaction influenced by Satisfaction of equipments after getting the impact of amenities $Y_2 = 0.283x_2 + 0.765x_3$

Maintenance satisfaction influenced by Satisfaction of amenities after getting the impact of buildings; $Y_2 = 0.509x_3 + 0.508x_1$

Finally the overall satisfaction influenced by the operational satisfaction and maintenance satisfaction is given by:

$$Y = 0.563y_1 + 0.533y_2$$

From the above equation it is observed that the overall satisfaction (Y) of the passengers is influenced more by the level of satisfaction on operational aspects after taking the impact of the level of satisfaction on the maintenance aspects. Hence it can be concluded that the level of satisfaction on operational aspects is more influential than the level of satisfaction on maintenance aspects of the infrastructural facilities for the passengers.

Conclusion

The Indian airports have a long way to go to compete with the Aviation infrastructure of the other countries. Airports of the western countries are equipped to handle any kind of an emergency at any given point of time. Taking into consideration the investment requirement and the policy standardization it is quite clear that the Indian airports need more than privatization. It needs timely implementation (whether the Government does it or the private parties' do it is not important) but it is important to cash in on the situation. It is also important that an airport should be looked at an integral part of the aviation industry.

India stands to gain economically and environmentally from implementing an effective and efficient, balanced aviation infrastructure system. Economic gains encompass both capital savings and reduced waste, both in freight system and in the user industries. Environmental gains include reduction in emission and reduced energy consumption. Environment friendly economic aviation policies can be created and effectively formulated. But the implementation calls for strong leadership to facilitate political alignment across the centre and states and also programmed management.

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