

# Construction Planning and management of Airport

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*Abstract—Challenges and difficulties of managing construction project increases when the context is related to an airport environment. Consequently, there is a need for holding bodies of airports to change their procedures and practices in order to accommodate the unique and complex construction environment. Within an airport environment, different strategies play a significant role in achieving organizational success through an effective and efficient delivery of various construction projects. Those strategies are influenced by project management strategies and human-related competencies. This is, in turn, requires strategic competence and ability at both functional and operational levels. The Construction projects, especially the highway construction projects, uses huge amount of resources on and off the field in various forms of resources viz., materials, plants, equipment's and human resources along with money, time and space. The uniqueness of the projects makes the resource planning a tedious job as the efficiency of each resource depends upon a huge number of working condition factors. A detailed study of resource planning and productivity can, thus help in good resource planning, better monitoring and overall controlling of the project.*

**Keywords – construction industry, airport construction, project management strategy, human resource strategic management.**

## 1. INTRODUCTION

### 1.1 General:

The construction industry is one of the major industries in terms of both size and impact. It is considered not as a single industry but one where several market sectors integrate to form the industry. Indeed, there is no obvious agreement on the classification of construction sectors or on how the industry can be broken down into different Construction plays a significant role in the overall economy of both developed and developing countries in terms of economic growth. Its various activities and related projects also have a great impact on different key factors of a country's overall development aspects. Therefore, it is essential for construction activities to be accomplished successfully in an effective and efficient way. This requires various strategic and management capabilities

Among the different types of construction sectors and their numerous types of construction works, airport projects, in particular, are very complex and have unique characteristics. In an airport, a number of significant and diverse activities

are performed, whether within the airside, terminal or landside zones. Airport owners or statutory bodies/operators need to manage both air transport operations and also real estate investments and various construction projects.



Fig1: Airport Model

## 1.2 Characteristics of Airport Construction

An airport industry is a very large investment with a high level of impact on a region's economic values and development. This is associated with extreme complexities and difficulties that face an airport operator, which is responsible for operation, management and infrastructure development. Ref. cited that airports are becoming a multimodal transportation hub link with large numbers of buildings within substantial areas that constantly require refurbishment and/or expansion in order to meet the community needs, growth and changing needs of the industry. Construction projects within an airport environment therefore represent a fundamental part of its operations. Numerous recent journal articles and publications have dealt with various aspects of managing airport operation. However, despite this theoretical base, there is a lack of rigorous literature that examines the management of airport construction projects and their related issues. Researchers and practitioners through case studies, journal articles and annual reports have illustrated the reasoning behind the challenges that face operators in managing and controlling construction projects

## 1.3 Construction and Development of Civil Airports

### 1.3.1 Overview of Airport Certification and Transport Airports

By the end of 2014, there had been 202 certified transport airports (excluding those in Hong Kong, Macao and Taiwan), an increase of 9 over the previous year. There had been 61

certified general aviation airports (excluding makeshift airports and landing points), an increase of 4 over the previous year. 1.3.2 Laws, Regulations and Technical Standards for Airport Construction and Management

The Department of Airport finished examination and approval of Provisions on the Management of Operation Safety Licensing of Aviation Fuel Supplies at Civil Airports (newly developed) and Provisions on the Management of Equipment Dedicated to Civil Airports (CAAC Order No. 150 amended). The Department initiated the development of Provisions for the Management of General Aviation Airports, and continued the revision of Provisions for Civil Airport Operation Certificate (CAAC Order No. 156) and Provisions for the Management of Operation Safety of Civil Airports (CAAC Order No. 191). The Department revised Examination Methods for the Siting of Civil Airports, and issued the Guidance on the Building of Low-Cost Terminals, General Requirements and Test Specifications for Low-Impact Resistant Poles and Towers, Management Methods for the Industrial Standards of Civil Aviation Engineering Construction, and the Content and Format Requirements for the Compilation of Standards for Civil Aviation Engineering Projects.

**1.4 Safety Management of Airport Operations**

The Department earnestly implemented the notion of sustained safety to ensure the effectiveness of safe operations and safety management at airports. First, special oversight campaign for the implementation of alternate landing regulations in the whole industry and special rectification campaign for airport operation safety were carried out. Second, special supervision and randomized examination of airport emergency rescue drills were organized. Third, the evaluation of bird strike prevention and the building of national bird alert system for airports were launched.

**1.5 Civil Aviation Infrastructure Development**

All efforts were made in the construction of key civil aviation projects. CAAC identified 23 key construction projects in which three expansion projects at Nanjing Lukou Airport, Tianjin Binhai Airport and Nanning Wuxu Airport were completed. Nine extended projects such as Guangzhou Baiyun Airport and Chongqing Jiangbei Airport went on as planned. Among the 7 newly commenced projects, the new Beijing airport and expansion of movement areas at Pudong Airport kicked off, and preliminary work was done for other five projects including those at Lanzhou Zhongchuan Airport and Changchun Longjia Airport (Phase two). Among the 4 airports whose preliminary studies were made, the filing for the relocation of Qingdao Airport was approved; new airports of Chengdu and Xiamen were under review with regard to their project filings, and the siting application for the relocation of Dalian Airport was not submitted for review and approval.

**1.6 Objectives of Project Planning**

Following are the objectives of construction project planning.

- Planning of each activity
- Construction Methods
- Planning for Construction Equipments and Machinery
- Procurement of materials
- Planning for employee skills
- Planning for required documents and drawings
- Financial Planning

**1.7 Use of airport**

- Civil or for military
- Adaptability for other usage during emergencies
- Clear air space for take off and landing
- High rise buildings not allowed
- High trees are cleared off
- Zoning laws are made to take care

**2. METHODOLOGY**

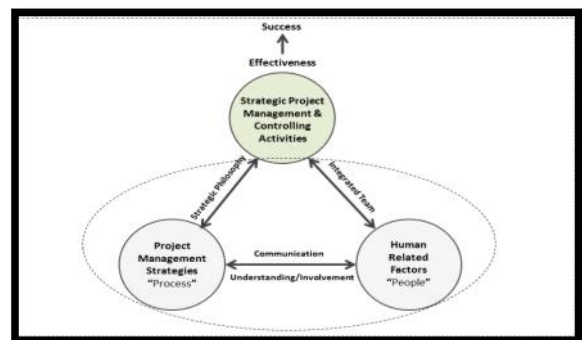


Fig : 2.1 The Effectiveness Model Of Airport Construction

**2.1 Introduction**

“Ninety percent of aviation is on the ground. Only 10% is in the air” (Dempsey, 2000: 1). One of the most essential parts of the air transport system is the airport. Young and Wells (2011) stated that an airport provides solid platform for passengers and cargo to transfer between modes of transport, surface and air. Airport infrastructure provides aircrafts with their entire functional needs, so they can take-off and land. However, the aviation industry comprises complex industrial enterprises represented by numerous airports and various systems, regulations, rules, workers, facilities, users and customers. As with a city, a huge range of facilities and services integrate to fulfil the critical role of an airport and form the aviation industry.

## 2.2 The Components of an Airport

In cities or regions the infrastructure projects in the aviation industry are some of the largest development projects undertaken (Dempsey, 2000). Such projects are extremely costly and time-consuming. To complete the whole process of building a new airport, refurbishing or expanding activities from definition stage to handover, an airport body may spend hundreds of millions of pounds and take a decade or even more. Ashford et al. (1997) argued that an airport is complex and difficult in terms of management, operation and design features. Indeed, it is developed to serve various users, passengers and cargo, aircraft and ground service vehicles. Each of these diverse users needs a specific facility to operate and function within an airport property.

## 2.3 The Airside

The airside area of an airport comprises facilities that serve aircraft operations and movement whether around the airport or from the air. It can be further divided into two main parts, the airfield and airspace. The airfield is planned and managed to facilitate the operation of aircraft within an airport's physical boundaries, while airspace represents the off the ground area of an airport, in which aircraft manoeuvre or pass through to another airport. The aprons are the link point between passengers and aircrafts; aircraft parking areas are where passengers board and disembark and aircraft receive technical-related services, such as luggage, cargo, catering, fueling and any other preparation prior to flight.

## 2.4 The Landside

Passengers, cargo and ground vehicles are served by airport landside components. The airport terminal and ground access are further divisions of the landside, which are planned and managed to accommodate specific users. Terminals are used for passenger and luggage movement from landside to airside where the aircraft is. Ground access serves ground vehicles whether in the surrounding areas or between various buildings within an airport property.

## 2.5 Airport Organisation and Administration

Activities in the aviation industry need different groups to function. These groups should interact and communicate properly in order to manage overall operational activities and provide essential buildings, installations and equipment that facilitate the movement of passengers, aircraft, cargo and service vehicles. An airport obtains its air navigation regulations and various policies, principles, air transport schedules and techniques from the International Civil Aviation Organisation (ICAO) (Young and Wells, 2011). Many areas of aviation activity are supported by the International Air Transport Association (IATA), the world airlines' trade association, which helps formulate industry policies of critical aviation issues. IATA represents most airlines and

provides safety and security for aircraft. It defines a number of crucial airlines standards, introduces various concepts to simplify the air transport business, e.g.

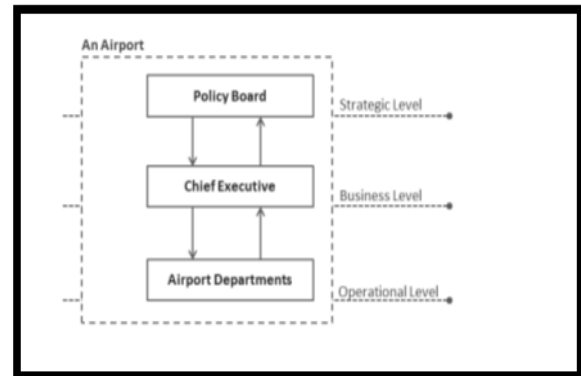


Fig: 2.2 Levels of Airport Management System

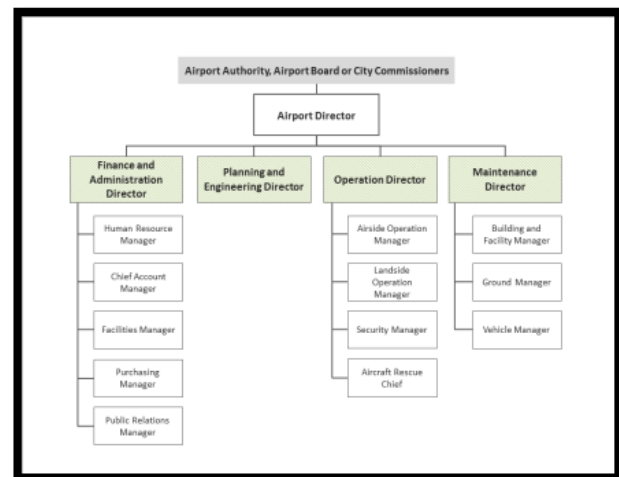


Fig:2.3 Typical Airport Management Structure

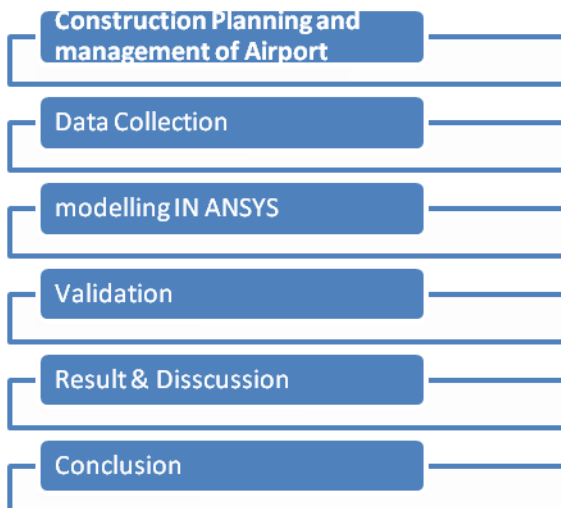
## 2.6 Airport Management

In simple functional terms, Ashford et al. (1997) argued that an airport facility is developed to enable aircraft to take off and land. However, between these operations, aircraft crew, passengers and cargo are loaded and unloaded along with supplying aircraft. Moreover, numerous managerial activities take place to support the operational mechanism. The air transport industry and, in particular, its various airport hubs have undergone remarkable changes over the last two decades in terms of infrastructure development and utilized technologies. Nevertheless, Feldman (2007) argued that inadequate attention has been paid to the managerial characteristics of airports, how directors and managers should manage, what their required skills and styles should be and how their performance and success should be measured. Managing an airport, as explained in the previous section, is associated with a wide range of accountabilities from operating the airport on day-to-day basis, directing financial activities, managing huge infrastructure projects.

## 2.7 Airport Ownership and Operation Structure

Organisations play a significant role in assessing competitiveness, as they shape firms' oversight, management procedures, overall performance and strategic behaviour. This is also applicable to the airport setting. The aviation industry and airport sector, in particular, have significantly changed and developed over the last few decades. The dimensions of the development vary between countries and even between different airports within the same area. However, one of the dominant areas is structural change in the ownership and management of airports (Graham, 2008). Forsyth et al. (2011) noted three drivers of an airport's ownership and management development trend, which are, in fact, the main characteristics of the airport industry. The market of the airport industry operates in either horizontal or vertical structural form.

## 2.8 Future SCOPE



## 3. CASE STUDY

### STUDY AREA

#### 3.1 Why AIRPORT is proposed to purandar?

Initially a site near Chakan was fixed for the airport. But due to opposition from local farmers and the mountainous terrain, the government decided to set the new airport in Purandar taluka as it was a flatter region compared to Chakan. The proposed airport in Purandar will be spread over 2,400 hectares.

#### Connection of proposed purandar airport

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Chakan. The proposed airport in Purandar will be spread over 2,400 hectares.

Latitude and longitude

18.2825° N, 73.9735° E

Target Population

20000

- SITE SELECTED-PURUNDAR DIST.-PUNE



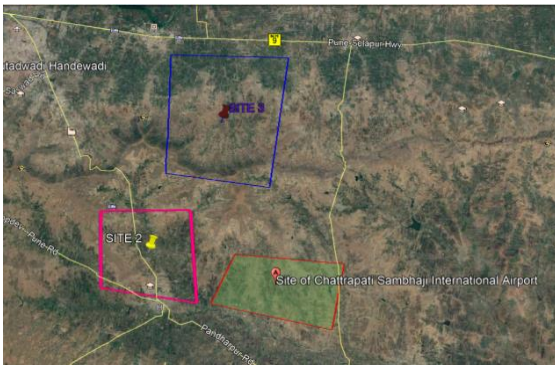


Fig 3.1 Google Maps



Fig 3.3 Airport Model .



Fig 3.2 Actual Site Photo

Fig 3.3 Proposed airport site in Purandar near PargaonMemane and Khanvadi village. (Express Photo by PavanKhengre)

In a major push to the international airport project at Purandar, the state government has appointed the Maharashtra Airport Development Corporation Ltd (MADC) as the special planning authority (SPA) for it and notified the 2,832-hectare land to be acquired for the development of the airport. In its notification, the state government said MADC had been appointed as SPA for the airport area to ensure its planned development.

The proposed airport at Purandar has been named ChhatrapatiSambhajiRaje International Airport. The area proposed by MADC for the construction of the airport has been declared as notified area after consulting with the Town Planning Directorate and is spread across the villages of Vanpuri, Kumbharvalan, Udhachaiwadi, Ekhatpur, Munjavdi, Khanavdi and Pargaon in Purandartaluka. "Any planning authority... functioning in the said area prior to this notification, shall cease to function in relation to the notified area," it stated.

#### 4. CONCLUSION

The project in rural roads are how much imported for economy of any country. Education, health and job are other important factor which affected by rural road. Comptroller and auditor General of India observed deficiencies in physical and financial planning, fund utilization, implementation, tendering process, quality assurance, and maintenance of these roads. Improvement of rural road is needed for getting best output. Developing countries has not always sufficient budget to improve rural road, so a methodology is also needed for prioritization of rural road network.

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### 3.2 PROJECT DETAILS

In July 2018 that Maharashtra state government gave a major push to plans for a new airport in Purandar. The Maharashtra Airport Development Corporation (MADC) was appointed as the special planning authority, bestowed with all the powers of a Planning Authority for land acquisition on the area notified for the airport. MADC declared 2,832 hectares of land as a notified area to be acquired for the project, an area spread across seven villages: Pargaon, Ekhatpur, Munjavdi, Kumbharvalan, Vanpuri, Udachiwadi and Khanvadi. With notification of the land area the boundary of the proposed airport was confirmed and a copy of the plan made available to the public

The airport project is headed by Maharashtra Airport Development Company (MADC) and the investment is estimated at US\$2.1 billion. The airport is to be called ChhatrapatiSambhajiRaje International Airport, named after the second ruler of the Maratha kingdom. An airport with two parallel 2,400 meters length runways is planned. In October 2016, when the airport at Purandar was announced, the land requirement was 2,400 hectares. But by July 2018 the required land area had increased to 2,832 hectares

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