

Man has always been fascinated engineering essay

[Engineering](#)



Introduction

Background

Man has always been fascinated by the sky and always wanted to fly like a free bird. This desire to explore the unexplored is the cause for genesis of the aviation industry. From the beaches of Kitty Hawk to the stealth fighter of the day, the industry has grown by leaps and bounds. The First World War provided the forces necessary for propelling the industry forward. Military aviation had its roots during these dark days while the need for faster transportation resulted in the civil aviation industry. Across the world, aviation industry has been divided into Military and Civil. The International Civil Aviation Organization (ICAO) states that all civil aviation operations are divided into three categories: commercial air transportation, GA and aerial work (Sheehan, 2003). Commercial air transport involves transporting passengers, cargo or mail for remuneration or hire. It may operate as per a published schedule or without a published schedule. The Scheduled operators over time have resulted in the growth of airlines while the Non-Scheduled tend to be part of General Aviation (GA). Aerial work on the other hand relates to specialized services like agriculture, surveying, search and rescue or aerial advertisement. End of the First World War saw the growth of the " barnstormers". Pilots who had participated in the war, post their active military service were the harbingers of GA industry; providing services ranging from crop dusting to firefighting. GA deals with private owners of aircraft, company owned aircrafts, flying clubs, small taxi operators. United States of America (US) has been the home of GA and a number of practices have emerged and it is to be seen if the same practices can be transplanted

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in the emerging economies like India. Writing in the 1970s, Jeremy Warford used the term " GA" to cover all civil aviation apart from the commercial airlines. The aircraft involved vary considerably in size and sophistication and are used for a variety of activities from transporting executives to crop-spraying and recreational flying (Warford, 1971). With the evolution of the GA industry the definition has also undergone a change. According to Allen, in the US , the home of GA , it encompasses the manufacture and operation of any type of aircraft that has been issued a Certificate of Airworthiness (COA) by the Federal Aviation Administration (FAA), other than aircraft used for scheduled commercial air service (airlines) or operated by the U. S. military. (Allen, Blond, & Gellman, 2006) Three out of every four take offs and landings in the US belong to GA flights (GAO-USA, 2001). The Air Taxi Survey (FAA, 2004) has listed down a number of factors like air medical services, aerial observations, external load etc. which have contributed to the growth of GA in the US of America. Versatility of GA can be seen from its usage in tourism, disaster relief, medical or emergency evacuation, pilgrimage or industrial usage in oil and gas, geological surveys, cleaning of transmission lines etc. (IBAE, 2011). New pilots are trained in GA before joining as airline transport pilots with scheduled operators. A special use of GA aircraft happens as part of Campaigning in a democracy like India. GA is further categorized into recreation, personal and business. Some people use an aircraft for recreational, sightseeing or sports purposes while others use it as a personal mode of transportation. (Sheehan, 2003)According to the testimony of Ed Bolen before the US congress, BA (BA) is an FAA defined term. According to the FAA (FAA), BA is the use of any GA aircraft piston or

turbine for a business purpose (Bolen, 2011). BA is also considered as a catalyst for economic growth. Businesses that use GA are said to gain competitive advantage, while communities gain job opportunities and access to the nation's extended air transportation system. It tends to contribute to growth of Gross Domestic Product (GDP) directly and has a number of multiplier effects. It benefits the users of transportation services and the country's economy at large. It increases the efficiency and productivity of businesses by reducing travel time that would be required to drive or to use more congested commercial airports. Business Aircrafts have emerged out as force multipliers (Nigam, Ajit; Singh, Arjun, 2012). Helicopters or Rotary crafts have special operating characteristics like its ability to take off and land vertically, and to hover for extended periods of time. Today, helicopter uses include transportation, aerial photography, motion picture photography, reflection seismology, construction, firefighting, search and rescue, tourism, military uses etc. The role of Helicopters in Emergency Medical Services (EMS) cannot be denied and is known as Helicopter Emergency Services (HEMS). The advisory circular issued by FAA in 1991 forms the basis of HEMS. It divides the medical care into Basic Level Services and Advanced Level Services and lays down the procedures and regulations for equipment on board, communication systems, operating procedures , training of personnel (including medical and flight crew) etc. The National BA Association (NBAA) of US of America has studied how companies use their aircraft for business purposes. They found that customer visits, humanitarian flights, charter revenue flights, corporate shuttles, attracting and retaining

key people are some of the ways of utilizing BA aircrafts. (NBAA, 2011).

Table 1 describes the utilization of BA. Table : Utilization of BA Aircraft

UTILIZATION

DESCRIPTION

Key Employee Travel

Getting the right person in the right place at the right time

Customer Visits

Bring Customers to you

Customer Trips

Visit Customers on their turf

Scheduled Customer Service

Routine trips to service customer accounts

Emergency Customer Service

Rapid response trips to fix what is broken and " put out fires"

Humanitarian and Charitable Flights

Being a good Corporate Citizen; helping employees

Sales and Marketing Blitzes

Multiday/ Multicity sales trips covering a region or sales area

Charter Revenue Flights

Offering your aircraft for use by Charter Operator

International Flying

Regularly outside the US

Helicopters

Used to go directly to specific destinations; not just between airports

Management Teams

Transporting Management Teams to organization sites

Engineering Teams

Transporting Production or Engineering teams to critical work sites

Corporate Shuttles

Regularly scheduled flights between organization facilities or customer sites

Making Airline Connections

Making Airlines Connections, particularly international flights

Carry Priority Cargo

Spare Parts or Mail

Special Projects

Such as advertising shoots

For Goodwill/ Lobbying

Transporting elected officials or candidates; going to law makers

Utilitarian Purposes

Mapping , Aerial surveys or inspections

Market Expansion

Evaluating New Markets or sites

The Airborne Office

Working/ Conferring En route

Personal Travel

Employees and their families

Attract and retain key people

A tool to facilitate work or get people home more nights

Maximize Employee Safety and Industrial Security

Better than airlines It is to be noted that BA has not been defined under ICAO and is not included in the ICAO vocabulary. BA is represented worldwide through International BA Council (IBAC). The council has a permanent observer status at ICAO and is housed in the same building as ICAO.

Although individuals or companies own the majority of business aircraft, BA can also use arrangements such as chartering, leasing, fractional ownership, time-sharing, interchange agreements, partnerships and aircraft management contracts (ICAO, 2005). NBAA has defined BA as the use of any " GA" aircraft for business purpose. As such BA is a part of GA that focuses on business use of airplanes and helicopters (NBAA, 2011). The Annual Report of IBAC (International BA Council) elucidates BA as that sector of aviation which concerns the operations or use of aircraft by companies for the carriage of passengers or goods as an aid to the conduct of their business, flown for purposes generally considered as not for public hire and

piloted by individuals having, at the minimum, a valid commercial pilot license with an instrument rating (IBAC, 2010). GA tree is depicted in figure 1 (Nigam, Singh, & Pahwa, 2012). Figure : The GA TreeThe BA is further subdivided into the following

Commercial

The commercial operation or use of aircraft by companies for the carriage of passenger or goods as an aid to the conduct of their business and the availability of the aircraft for whole aircraft charter, flown by a professional pilot(s) employed to fly the aircraft.

Corporate

The non-commercial operation or use of aircraft by a company for the carriage of passengers or goods as an aid to the conduct of company business, flown by a professional pilot(s) employed to fly the aircraft.

Owner Operated

The non-commercial operation or use of aircraft by an individual for the carriage of passengers or goods as an aid to the conduct of his/her business.

Fractional Ownership

The operation or use of aircraft operated by an entity for a group of owners who jointly hold minimum shares of aircraft operated by the entity.

Fractional Ownership operations are normally non-commercial; however, the operation of the aircraft may be undertaken as a commercial operation in accordance with the Air Operations Certificate (AOC) held by the entity. The researcher has used the above as the operative definition for the purpose of

defining the scope of the present research work. USA is a country which has not only been in the forefront of BA but also has benefitted substantially from its growth as can be seen from the following. BA employs about 1.2 million people and contributes billions of dollars to us economy. Sale of old and new airplanes as well as maintenance and operational support result in large financial benefits for every star in the nation most of the aircraft used for business globally are made, serviced, operated and maintained in the USA. It is interesting to note that relatively small numbers of aircrafts made outside the USA are assembled with American made electronics, avionics, engines, paint and other aircraft parts. A number of jobs are result of BA operations, Pilots, technicians, dispatchers, schedulers, flight attendants, trainers, employees and other support personnel are required for flight made by business airplanes. Companies that use business aircraft have several advantages over non uses in terms of annual earnings, share price, stock and dividend growth as well as market captilisaion. BA is environmentally friendly and has a limited carbon footprint with a good environmental record. Emission From aviation is only a small fraction of all emissions from transportation. More over emission from business aircraft are a tiny portion of those. The business aviation industry has been using technology to reduce emission and noise while enhancing efficiency and safety. 97 percent of business aircrafts are used by governments, charitable organizations, universities and small and medium enterprises . Out of 15 thousand business aircraft registered in US only 3% of are used by companies. The reach of business aviation is to over 5 thousand public used airports as against 70 major airports where US airline flights go to out of the

total traffic at busiest airports only about 4% accounts for business aircraft. Transportation of cargo that cannot be carried by airlines is done by business aircraft. After the terrorist attack in the US, government has partnered with industry to introduce stringent security procedures (NBAA, 2011). With India inching towards its rightful position in an interconnected world the time has come to focus on the BA. It is also important to understand the Regulatory, Operating and trading environment both from perspective of new as well as pre owned aircraft. On the other hand, government policy in China and India remains effectively hostile to GA Activity. There are signs that both nations see advantages in opening up airspace and encouraging growth in GA Sector, but the movement is glacial (Royce, 2011).

Organization of Thesis

Chapter 2 reviews the literature and the themes which emerge out is used to create a conceptual lens through which the research problem is viewed at the outset. Chapter 3 focuses on the methodology adopted and describes the data collection process. Chapter 4 glances at the practices of BA worldwide. Chapter 5 is devoted to analysis of categories as a result of use of GT. Further factor analysis is used for identifying factors affecting the growth, opportunities and challenges for BA in India. Chapter 6 describes the findings of the research while Chapter 7 presents the conclusion. Chapter 8 discusses the recommendations emerging from this research and Chapter 9 points to the future scope of the research.