

# Forecasting global demand trends for aviation



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Forecasting aviation demand is an important factor in being able to make recommendations on the capacity and connectivity that the UK needs to maintain its status as a leading global aviation hub. Without such forecasting assessments for the future aviation demand it is hard to reach an understanding of what is needed for example additional runway or airport capacity to accommodate growing numbers of air passengers (Airports commission 2013). General Aviation demand forecasting plays a highly important role in aviation and planning. For example, the forecasting in general aviation is one factor used by the Federal Aviation Administration (FAA) to create benefit-cost analyses associated with airport development (*GRA, 2011*) and decide the allocation of construction/improvement grants among airports (*Ghobrial 1997*). Market share forecasting in Aviation can be defined in many ways, one broad definition is; market share forecasting is a simple top down approach to forecasting where current activity at an airport is calculated as a share of some other more aggregate external measure for which a forecast has already been produced. Then an assumption is made about the airports projected share of activity in the future. There are four major forecasting methods; market share, econometric, time series and simulation modelling (*Airport Aviation Activity Forecasting (2007)*).

When forecasting aviation demand there are key internal and external factors that need to be considered such as; competitors, prices, weather, new emerging destinations, economic situations, political situations, time of year (seasonal), trends/popularity, technological and GNP. When forecasting demand for a period many companies will use research tools such as IATA reports which are from the International Air Transport Association. For

example, according to (IATA: State of the industry and global economic outlook), India will displace the UK for the third place in 2025. The international air transport association (IATA) forecasts global industry net profit to rise to \$38.4 billion in 2018, an improvement from the \$34.5 billion expected net profit in 2017. This would then form one of many key reports and research to help a forecaster determine demand. One of the first considerations in beginning to try forecast demand is understanding the importance of different demand factors and how they have influenced demand in the past and how they could continue to do so in the future. These are necessary to understand the factors affecting demand to understand the market and to forecast traffic better. Were capacity not to be provided in line with demand there would be a number of consequences, for example constraining demand would increase the cost therefore leaving a disadvantage against competitors.

According to FAA documents (FAA Aerospace Forecast: Fiscal year 2015-2035. Washington D. C. March 2015) and interviews with FAA officials, the TAF forecasting for their future aviation demand at specific airports is based upon and calculated by using several types of forecasted and historical data. Such as; aviation activity, socioeconomic factors (income, populations), the cost of flying and operational metrics seats per aircrafts, load factors etc). Developing this further, one important factor that has previously influenced demand and could continue to do so in the future is the cost. The cost of travel is essentially the price paid by the customer to buy an air ticket. As air travel becomes cheaper a larger number of people can afford it therefore resulting in a bigger increase of air traffic with IATA forecasting a predicting

a rise in passenger numbers for 2018 to 4.3 billion (6.0%+ on the 4.1 billion passengers in 2017). In the last few years, the price of unit per trip has been on the downtrend due to improvements in airline efficiency and increased competition with IATA stating in its Strong Airline Profitability press release that Passenger traffic (revenue passenger kilometres or RPKs) is expected to rise 6.0% (slightly down on the 7.5% growth of 2017 but still ahead of the average of the past 10-20 years of 5.5%), which will exceed a capacity expansion (available seat kilometres or ASKs) of 5.7%. CAPA has also stated that in its Aviation outlook for the end of 2017 to 2018 that 2017 has arguably been the sweetest spot for combined airline profitability and traffic growth ever experienced. Basking in globally synchronised, if modest, economic growth, with historically low fuel prices and interest rates, airlines have lowered fares, in the process adding extra stimulus to passenger traffic growth. Thus, reiterating the importance of costing for airline growth and forecasting for future demand as forecasters look at previous demand trends in aviation.

As aviation is within a dynamic and turbulent industry, therefore forecasting aviation traffic within a changing environment using these specific key factors is how companies get the most accurate forecasts. One demand factor is the changing environment around aviation. The market environment around aviation includes things such as the economy, laws, technology, demographics, rivals and buyers. Air transport drives and is driven by processes of globalisation, international trade, cultural & social exchange, migration, commerce and tourism. As aviation and commercial flights began to grow so did globalisation this then in turn created tourism, potential new

destinations and new economic growth for countries in the past and they still influence demand today as “ during the 1970s the development of the jet engine and wide-bodied aircraft essentially triggered the era of mass tourism in places like Florida, Greece, Hawaii and Spain. And in subsequent decades the airline industry has experienced radical shifts in the regularity regime that sets air fares and authorises air routes and these major changes have further altered the Geography of destinations.” Anne Graham 2008 states. The changing market could influence demand in the future because of a macro environment surrounding aviation. A quick pestel analysis used by businesses for the macro environment would be; political; Air line liberation & open sky agreement. Social; customer environmental awareness & consumer demographics. Environmental; controlling noise pollution & carbon footprint. Economical; uncertainty of fuel cost & economic state of the region. Technological; internet adaptation & increasing efficiency machines. Legal; corporate lawsuits.

Competitors are also one of the things changing the demand for the airlines, for instance the different airline types; network legacy airlines (different service classes, luxury aircraft etc, low cost airlines (price leadership, fewer services) and cargo airlines (dedicated to transport of air cargo). Competing airlines influence demand factor heavily as most airlines offer the same routes but with different service and cost options. This in turn can influence demand as passengers are given a wide choice of different airlines with ranging costs, destinations and services and if the airline doesn't keep up with the competitive costs or technology then could face going out of business. For example, as stated in the Aviation and tourism; implications for

leisure travel book” approximately 80% of southwest passengers fly nonstop flights and the largest destination in terms of daily departures is Las Vegas where its low fare operation has attracted a significant number of price sensitive leisure travellers. Southwest’s emphasis on cutting costs and offering low fares means it can play a key role in shaping the accessibility of places like Las Vegas.” This in turn proves that airlines that have advantages such as low-cost seats yet good service and destinations will become a top rival and keep repeat business.

Historically air transport has been subject to strict regulation which shaped the initial industry, firstly there was the Paris convention of 1919 established the concept of air sovereignty by Nation states. Then the Chicago convention of 1944 reinforced the concept of regulatory bi-lateral arrangements and the US deregulation act of 1978. The US airline industry was deregulated in 1978, based on the expectation that many new discount airlines would enter the field and provide the public with considerably lower airfares. After deregulation started many new discount airlines did come into existence however the major airlines developed a strategy to eliminate the discount airlines by using aggressive tactics such as occupying gates.(Sheth, Jagdish N. 2007) The outlook for discount airlines improved from 1993 to 2000, As time wore on, the resourceful discount airlines began competing on three-fourths of the 1, 000 busiest routes in the country. Many airline analysts believe that the discount carriers that offer good service and some amenities will continue to expand their market share.(Sheth, Jagdish N. 2007) Policies such as de regulation has effected demand to a certain extent as after the de regulation, airlines developed a hub & spoke system which nearly all

airlines use today as it connects passengers to many different destinations and flights. A benefit for hub cities is the huge number of flights to choose from to many different destinations for example, if a passenger needs to travel between two major hubs such as Detroit and Chicago then there are many flights on 5 airlines (American, midway, northwest, southwest and united to choose from (John M. Kost, 1988). therefore, the hubs coming from deregulation have created more demand because of people needing connecting flights between hub cities for either leisure or business purposes making it easier to travel than ever. The result however is that hub cities have very congested airports.

Aviation is an industry built from demand so is vulnerable to shocks and changes which can be volatile and effect demand for example the geo-political state, or the bad economic climate of a country would affect the aviation demand there. For example, the business environment surrounding aviation is split into 2; the internal environment (man, money, marketing, machinery, management structure and miscellaneous factors these are things they can control) and the external (economic, geo, social, tech, political and cultural factors out of their controls). Demand is mainly driven by the external factors, its how the company responds to the external environment that determines whether it will be successful or not. GDP is a huge factor in countries for how it affects the aviation demand as a fall in GDP for a country could be down to interest rates, consumer confidence, asset prices and real wages where inflation can cause a decline in incomes. (Tejvan Pettinger. 2017). This would then mean less spending for consumers on luxury items such as trips away as airline tickets, therefore demand

factors aggregate demand. Business Insider 2018 states how US businesses accumulated inventories at a rate of \$13.9 billion in 2018, instead of the \$20.2 billion pace estimated last month. As a result, inventory investment was neutral to GDP growth instead of adding 0.13 percentage point as reported last month thus explaining the link between low GDP and low consumer spending. Political changes in places around the world also have a huge effect on aviation, for example the embargo on Cuba. The US embargo against Cuba is a series of trade and travel restrictions enacted in response to the Cuban Revolution. These statutes prohibit the majority of imports and exports between the United States and Cuba, with exceptions to exports that support the Cuban people, information dissemination, and humanitarian assistance. Americans are also restricted from traveling as tourists to the island. (Engage Cuba Coalition). Reuters UK reported how Cubas state airline is crumbling along with Two former Cubana employees and several industry analysts say the airline's troubles stem largely from dual ills that afflict many parts of Cuba's state-run economy: the U. S. trade embargo and a problematic business model (Sarah Marsh, Nelson Acosta 2018). With the sanctions leaving the airline unable to buy suitable parts/new aircrafts it leased a plane from Damojh which crashed therefore also depleting faith as Several other Cubans interviewed by Reuters said that the crash outside Havana would make them think twice about air travel. (Sarah Marsh, Nelson Acosta. 2018).

Reliable forecasts for aviation play a huge role in the planning of routes, airlines, engine suppliers, air navigation suppliers and other profitable aviation organisations. Forecasting can have different time frames; short



term, medium term or long term depending on the intended use of the forecast. The form of the output, the amount of detail and the method used will vary depending on the use of the forecast, for example in Aviation forecasts are usually used to assist planning of airspace and infrastructure, air traffic control, terminal facilities, assist in the long-term planning of equipment and route structures and assist aircraft manufacturers. (ICAO 2014). The forecasting methods should be based on the following; availability of data & accuracy of data, intended forecast use, management sophistication. The most popular forecasting methods are qualitative, quantitative, causal methods, Delphi technique, time series of trend analysis and quantitative methods start with historical data such as previous sales and qualitative forecasting techniques comes from business experts who include data interpretation combined with their expertise (Sam Ashe-Edmunds 2018). For example, if someone wanted qualitative information then they could consider recent trends or by holding focus groups to discuss. Time series analysis is also a highly used method and is largely based on the assumption that historical patterns will continue, and they rely heavily on the availability of historical data (ICAO 2014). For example, ICAO explains that Elasticity of demand is an expression of the relationship between two variables and the concept is widely used to describe the relationship between the dependant variable (Y), air traffic, and explanatory variables (X) such as income, price, etc. Econometric analysis and other quantitative forecasting techniques are used to develop an airlines market outlook, the airlines share of a market is determined by several things. The degree of flexibility by traffic rights, the demand for air travel on routes from traffic generating factors (population and economic situations along with price and

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attractiveness of destination), competition between carriers or airline alliances and traffic shares of competing carriers or airline alliances serving a route can be influenced by price, frequency and aircraft type.

Qualitative and quantitative forecasting methods both have their advantages and disadvantages for businesses. Unlike quantitative forecasting, numbers are not at the core of qualitative forecasting, which relies on the judgement, experience and opinions of the expert/experts. The main advantage of using a qualitative method of forecasting is the ability to predict specific changes in sales patterns and consumer behaviour based on the expert's experience and judgement of specialists. Qualitative forecasting gives management the flexibility to use non-statistical sources, such as the judgement of managers and industry experts or sales professionals, this can improve the forecast because quantitative data cannot capture things that someone with years of experience can spot. The qualitative method also has disadvantages such as forecasters allow recent events to influence their perception about the future along with forecaster bias. Quantitative forecasting relies on numbers rather than expert opinions, with this method businesses can look at its sales/revenues from the past to spot patterns and trends.

In conclusion, accurate demand forecasting is important to the success of any business in aviation as it is so heavily influenced by the outside environment. There are many key factors that need to be considered when forecasting aviation demand such as geographical, political, competitors, policies and even things such as technological factors. For a company to be successful they need to account for the changing environment around the key factors and how this could change future demand, if a company

forecasts correctly using those then it should be successful. When forecasting the demand companies can use a variety of different methods depending on what the forecast is for, how long it needs to be and how accurate it needs to be, the forecasting method desired all depends on what information the company has and what they want to use it for to create the more accurate forecast.

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