

Introduction boeing
made history by
carrying the earliest



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Introduction

The Boeing Company was started by William Boeing in 1916, in Seattle. The initial name was Pacific Aero Products Company that was later (1917) changed to Boeing Airplane Company. It was in 1919 that Boeing made history by carrying the earliest international mail. Their association with the US military started in 1923. Until 1950, Boeing kept a low profile, but in 1950, based on speculations, it took a massive risk in deciding to manufacture a bigger aircraft that would serve a dual sales purpose; to military and to commercial airlines. The aircraft was named Dash 80 and the aircraft was ready in 1956. In 1966, Boeing developed the world famous 747.

For the first time, Boeing ventured into sub-contracting of work. Most of the work of 747 was sub-contracted to Japanese companies Kawasaki, Fuji and Mitsubishi. During the years, Boeing has taken over companies like Vertol Aircraft Corporation (1960) and Hughes Space and Communications and also

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had a merger with Rockwell International aerospace and defense units (1996) and McDonnell Douglas (1997). After the debacle in the mid 1990s, Boeing staged a comeback in the year 2006. Its main competitor was Airbus. By mid-2006, it was able to garner sales orders for its newest entrant, the super-efficient wide bodied 787, apart from the existing 737 and 777 jets. Now Boeing has five aircraft “ families” that differ in their size and capacity namely, the 737, 747, 767, 777, and 787. These have different seating capacities, ranging from 100 to 500.

Each family again comes in different variants. On the other hand, Airbus has four families namely, the A320, A300/310, A330/340, and A380. The seating capacity ranges from 100 to 550. It will better to understand the factors owing to the comeback of Boeing if we first evaluate the reasons of its downfall.

The purpose of writing this report is to ascertain the factors leading to the comeback of Boeing Commercial Aircraft in the aviation market.

Reasons of downfall of Boeing

Owing to the competition and subsequent drop in the sales of its aircrafts, Boeing could not meet its breakeven point which, at that time, was 250 to 270 aircrafts. The development costs were also too high. Boeing spent almost \$5 billion on the development of the 777 and \$8 billion on the 787. The performance of the airline industry and the demand of aircrafts are related in the sense that if the airlines are doing well, the demand for newer aircrafts will keep on pouring in, but if the airline industry is facing a slump, it will have an effect on the demand of aircrafts as well.

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After the terrorist attack in 2001, there was a steep decrease in airline travel and consequently, the demand of new aircrafts decreased. Figures reveal that the global airlines, as a whole, lost about \$40 billion during the period 2001 to 2005. There are various other factors that lead to the low traffic turnover in the airlines industry; number of employees, multiple job performance, in-flight services, choice of airports, etc. After January 2004, there was a surge in jet fuel prices; more than doubled.

As a result, the cost of jet fuel took 25% of the total operating costs, as compared to <10% in 2001. One of the major setbacks for Boeing happened in 1990, when the company decided to lower their prices in order to gain market share. The company also increased the production capacity subsequently to which, it had to hire thousands of extra workers. These workers had been borrowed from the suppliers of Boeing. This was again an insane decision by the company. The suppliers fell short of labor and could not deliver the components on time. As a result, the production was delayed and Boeing had to shell out penalties to the tune of \$1.6 billion.

Remedial Measures taken

Boeing learnt a bitter lesson from this debacle of 1990. The company then decided to follow the “ Moonshine Creative Philosophy” and the policy of “ Lean Production”. The company sent teams of its executives to Japan in order to study the manufacturing system of leading manufacturers of Japan, especially Toyota. The lean production system was evolved by Toyota, in place of the normally used mass production system. Ohno Taiichi, an employee of Toyota, was the one to develop this system. Ohno visited the US plants of Ford and was of the opinion that the mass production system was <https://assignbuster.com/introduction-boeing-made-history-by-carrying-the-earliest/>

not good. He pointed out three major problems. Firstly, in mass production system, huge storage capacities are required to store huge inventories.

This involved huge amount amounts of money for the warehouses. Secondly, if there is a defect in mass production system, a huge lot would be rejected because of the defect. This again will incur huge losses. Thirdly, the mass production system doesn't allow customer specific production. Because the products were manufactured in bulk, hence any single product could not be different from the others. Further, Boeing executives noticed that large machineries were being used to manufacture small parts.

So they decided to invent new smaller machineries. Teams called "moonshiners" were formed for this purpose and were given the task. The team noticed that 80% of the components were less than 12 inches long, whereas much longer machines were being used.

Adhering to the new systems of lean production and moonshine, the huge machineries were replaced with smaller ones that could be moved freely. One of the innovations of the moonshiners was the system of loading and fixing the seats. Initially, once the chairs were delivered, wheels were attached to each of them and transported in a container to the area near the aircraft. The container was lifted by an overhead crane and brought to the level of the aircraft's surface. The seats were then rolled inside the aircraft and then fixed. This was a very time consuming job. The moonshiners invented a new method of loading the chairs through the passenger door. This process consumed almost 6 times less time.

This change reduced the time of production to a great extent. The company could make customer specific products also and finally, big warehouses were not required due to the implementation of the just-in-time inventory system. These measures decreased the cost to a great extent. Apart from the inventions made by the moonshine teams, Boeing adopted various other measures to control the cost and expenses. One of the most important decisions was to change from the static line of assembly to the moving line of assembly. Normally, aircrafts are placed on platforms with ramps all around.

Workers move in and out to bring parts and fix them. Once the work at a particular workstation is finished, moving the aircraft to another workstation is a cumbersome process. The aircraft has to be brought down on a moving platform and then slowly moved towards the other workstation. This involves too much time. So in 2001, Boeing installed a moving line of assembly at its Renton plant near Seattle. In this system, the aircraft is mounted on a platform that keeps moving at a speed of 2 inches per minute. The workers have enough time to fix the components.

The platform passes through various stations where parts automatically arrive at the time they are needed. This process involves lesser time and all the work is done in a systematic way. Each workstation has its own light system that has different lights for different status.

So if there is a problem in any workstation, it is immediately detected and resolved. The effect of all these new methods was visible gradually. By the year 2005, the time required for assembling a 737 was reduced from twenty

two hours to eleven hours. Also, the work in progress inventory was reduced by 55% and the stored inventory by 59%. All the production lines, except that of the 747, have been changed from static to movable.

Future Demand

The future demand of aircrafts is mainly based on three aspects namely, speculations about the future worldwide economic growth, future demand for air travel, and the financial conditions of the world airlines. Both the major aircraft manufacturing companies Boeing and Airbus have their own predictions. According to Boeing's 2006 report, the world economy was supposed to grow by 3.

1% per annum, to be continued till the next 20 years. This projected growth was supposed to generate a growth of 4.8% in passengers and 6.1% in cargo. Based on these figures, Boeing came out with the figures that an estimated 27,210 new aircrafts (1360 per year) would be required within the next 20 years.

The value of these aircrafts was put at \$2.6 trillion. It is expected that out of these new aircrafts, 9580 will be replacements for those aircrafts that will have retired from the flying service.

As per estimates, by 2025 the total number of aircrafts all over the world will be 35,970. In 2005 the figure was 17,330. Further, it is expected that North America will place almost 28% of the new orders, Asia Pacific 36% and Europe 24%.

Business tactics being followed

Owing to the profitability of the 747, Boeing had an upper hand in the larger jet segment.

The 747 was the most profitable aircraft of its times, that gave Boeing a monopoly. But since the design was very old (1960s), it was sort of out dated. Moreover, many people believed that a new super jumbo aircraft with up to 900 seats would be in great demand. So during the 1990s, Boeing and Airbus initialized plans to develop a new aircraft in place of the old 747. Initially it was agreed between Boeing and Airbus that the project would be a joint one but later (1995), Boeing backed out saying that the costs were too much and the demands were not certain. So Airbus started working on the project on its own. The proposed aircraft was named A3XX, with a capacity of 500 passengers. Airbus forecasted the demand of such aircraft to be around 1, 400 over the next 20 years.

The cost of development was estimated to be around \$9 billion which ultimately rose to \$15 billion. In response to this, Boeing started drafting plans for newer versions of the 747 family namely, the 747-500X and the 747-600X. The 747-500X was to have a capacity of 460 passengers and a range of 8, 700 miles and the 747-600X 550 passengers and a range of 7, 700 miles. But in 1997, Boeing withdrew its plans citing limited market and high development costs (\$7 billion) as the reasons. The company also considered the fact that the bigger wing span of the new versions of the 747 would require airports to modify their gates. Another reason cited by Boeing was that due to the increase in “ point to point” flights across oceans the demand of such big aircrafts would not be too much. Instead, Boeing

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planned to come out with new versions of the 767 and the 777 that would have the capacity of flying up to 9,000 miles and passenger capacity of 400.

However, Airbus carried on with its plans to develop the A3XX mentioned earlier. In December 2000, the board of directors approved the development of the aircraft. The name given to the new aircraft was A380. The development costs were put at \$12 billion and the plane was scheduled to start operation in 2006.

Singapore Airlines was the one to start the operations. The aircraft was supposed to have twin decks, more leg room, and wider aisles. The capacity would be 555 passengers. According to Airbus, their new version would be able to carry 35% more passengers than the 747-400. Moreover, the cost per ticket would be 15 - 20 % less. It also stated that no change was required at the airport to accommodate the A380. But it was observed that London's Heathrow airport had to spend about \$450 million to make way for the aircraft.

Eighteen US airports also had to spend around \$1 billion to make changes at their respective airports. In response to this, in March 2001, Boeing formally made the announcement that its new "sonic cruiser" was capable of carrying 250 passengers with a flying capacity of 9000 miles. The speed was said to be just a little less than that of sound. The company claimed that the new aircraft would reduce the transatlantic journey by one hour and the transpacific journey by three hours. It was planned to make the sonic cruiser with low weight carbon fiber composites.

This would keep the operational costs to a minimum. The offer seemed very interesting but due to the downslide in the aviation industry due to the 2001 disaster, both the parties became less interested. Again Boeing came up with another proposal.

This time the conventional aircraft was to be developed using composite technology. The plane was given the name 7E7, where the 'E' stood for "efficient". In 2005, the plane was renamed as 787. In April 2004, the 7E7 was launched with in-hand orders of 50 aircrafts worth \$6 billion. The company that gave the order was Japan's All Nippon Airlines. This was supposed to be the largest single order in Boeing's history.

The 7E7 was supposed to carry 200 to 300 passengers for up to 8500 miles. It had twin engines, two aisles and the body was quite wide. The features were suitable for long point to point flights.

The plus point was that this version was a step ahead of its closest competitor, the A330-200. The 7E7 could fly 750 miles more than the A330-200. Another positive aspect of the 7E7 was that it was lighter and as such would consume about 20% less fuel.

The seats and the aisles were also wider. The windows would be larger for a picturesque view. The 7E7 would gather pressure 6000 ft altitude as compared to the normal practice of 8000 ft. the humidity was to be 20 to 30%. The estimated cost of the 7E7 would be \$7 to \$8 billions and the scheduled launch was in 2008. It was decided that almost 35% of the plane's fuselage and wing structure would be built by Boeing itself and the

remaining work was planned to be subcontracted to various companies. The <https://assignbuster.com/introduction-boeing-made-history-by-carrying-the-earliest/>

Japanese companies that had previously worked for Boeing namely Mitsubishi Heavy Industries, Kawasaki Heavy Industries and Fuji Heavy Industries were subcontracted 35% of the work and around 26% of the work was subcontracted to Italian companies, mainly Alenia.

Boeing also convinced the subcontractors to bear some share of the development costs. Boeing's wide bodied plant at Everett, Washington was selected as the assembling place. The subcontracted work was supposed to be done by the subcontractors at their facilities and then shipped to Everett. In order to speed up the assembling, the parts from the subcontractors were proposed to be airlifted. The assembling time was also reduced to three days. Boeing was able procure good orders for the 787.

In 2004, it booked 56 orders, in 2005 - 232 orders and in 2006 - 85 orders. The total was 373 aircrafts. The figures were beyond the breakeven point. Seeing the response of the 787, Airbus also announced its new model, the A350 that would compete with the 787. The capacity of the A350 was similar to that of the 787 (200 to 300 passengers).

It was also made of composites. But unfortunately, Airbus could not garner that much response. The airlines were hesitant in placing the orders because they were of the opinion that the A350 did not match the 787 in quite some respects. The operating efficiency was not up to that level, the flying range was less and there were lesser amenities for the passengers' comfort.

Conflicts

Due to the competition between Boeing and Airbus, there have been a lot conflicts and tensions between the two companies, with both companies <https://assignbuster.com/introduction-boeing-made-history-by-carrying-the-earliest/>

blaming each other of enjoying unfair government subsidies. Airbus was able to get \$13.

5 billion as government subsidies from the period 1970 to 1990. A maximum of this amount was in the form of low interest loans. In 1992, both the companies reached an agreement to rubbish their differences and conflicts.

The European Union negotiated the pact according to which the subsidies were fixed at 33% of the total cost of production of a new aircraft. This amount was supposed to be repaid, with interest, within a period of seventeen years. The indirect subsidies were fixed at 3% of the country's annual commercial aerospace revenue.

Recommendations

If Boeing Company wants to continue being a feasible aircraft manufacturer, it should stop bothering about the short term gains.

It should also stop investing in non-profitable ventures of developing new versions of aircrafts.