Capitalising on “digital simulations”

Managing during times of uncertainty…….

Report

According to a McKinsey Sustainability article published in February 2023, Commercial aviation faces its most uncertain future in decades. COVID-depressed demand is now resurging, but there are many uncertainties and challenges for operators and **manufacturers** to manage.

Insights

Increased passenger air-travel demand and the replacement of older aircraft will translate into demand for new more fuel-efficient passenger aircraft. Based on the numbers from their three scenarios, future demand for new aircraft could total between 5,200 and 11,600 through 2027.

Stand Out message…

There’s going to be uncertainty…….

So the challenge for most manufacturers in this supply chain is to deal with this uncertainty by being more agile!

The commercial aviation industry is facing a tidal wave of demand—passenger air travel has largely rebounded from the COVID-19 lows, aircraft orders are being placed at an aggressive rate, and suppliers, operators, and OEMs are feeling pressure to deliver at a level that is straining production capacity and equally the extended supply chain.

*Major manufacturers have **plans to ramp up*** production and are facing challenges in scaling in-house capacity and supply chains.

To fulfill this demand, OEMs have announced that they will scale up production capacity to historically high rates of between 55 & 100 aircraft per month for the next five years.

This ramp-up will require managing risks in the extended supply chain, such as raw materials availability, inventory health, and workforce reliability, in order to have confidence the weakest links in the chain can perform at this level, with quality products consistenly delivered on time.

To help visualize the uncertainty, McKinsey have considered ***three scenarios for travel demand through 2027*** and then projected the number of aircraft that would be needed in each case. In two of theei scenarios, despite the current situation, the underlying demand for aircraft could be lower than the current backlog, which may have repercussions for the bottom lines of operators and manufacturers, which will flow down into the already challenged tier 1, tier 2 and SME suppliers.

Digital twins offers manufacturer’s an excellent opportunity to evaluate their entire operations from design through engineering to final assembly and test, enabling a large variety of scenarios to be modelled quickly in a virtual world ahead of making any physical changes or investments to the process in the real world.

So when the customer asks the questions, have the answers at your finger tips.

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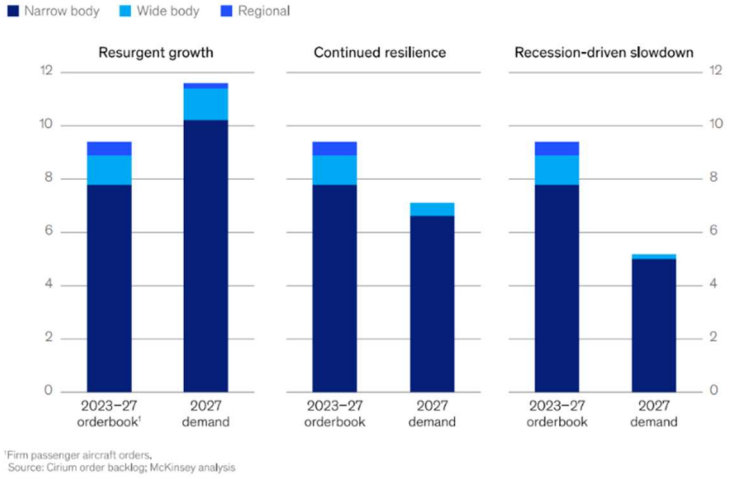
From 2019 to 2027 – 3 scenarios

Demand for aircraft would exceed the order backlog in the resurgent-growth scenario.

Global commercial aircraft demand scenarios, number of passenger aircraft, thousands



¹Firm passenger aircraft orders.
Source: Cirium order backlog; McKinsey analysis

The three scenarios…

- **Resurgent growth**

  Scenario A depicts resurgent growth as governments and businesses exercise robust monetary and fiscal responses to the current economic situation. It assumes that global energy markets and supply chains will become less volatile, travel demand in China will quickly resurge, and the consequences of the conflict in Ukraine will be contained.

- **Continued resilience**

  In scenario B, the economy shows resilience, even as fiscal stimuli wind down and central banks raise interest rates. Consumers remain cautious but continue to spend moderately. Travel increases, partly because governments reduce remaining travel restrictions, including a gradual rollback to precrisis conditions in China. On the downside, some economic disruptions continue because of elevated and volatile energy prices and limited supply chain disruptions in certain regions.

- **Recession driven slow-down**

  Scenario C, the most negative, which depicts a recession-driven slowdown in which global supply chain disruptions, slower reopening recovery in China, and higher interest rates to contain inflation combine to depress demand for air-travel.

- **So what?**

  Aerospace manufacturers can prepare for an uncertain future by ensuring the health and resiliency of their supply chain, prioritizing strategies for flexibility in their own business, and taking calculated steps toward modernizing manufacturing capabilities.

A digital twin may just allow you the agility to manage during this time of uncertainty.

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Managing uncertainty with a Digital Twin

Manufacturers will want to balance strategies for managing uncertainty in the short term against their long-term capabilities.

Integrating the best of digital innovation and investing in cutting-edge capabilities can build resiliency in the short term while enabling a unique product offering for years to come.

"Modelling is about finding the way from the problem to its solution through a risk-free environment where we can make mistakes, undo things, go back in time, and start over again."

Make contact…

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