

White Paper

Competitive Threats to the Aerospace Products and Parts Manufacturing Industry

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Industry Overview

The Aerospace Products and Parts Manufacturing industry (NAICS 336400) comprises establishments engaged in one or more of the following: (1) manufacturing complete aircraft, missiles, or space vehicles; (2) manufacturing aerospace engines, propulsion units, auxiliary equipment or parts; (3) developing and making prototypes of aerospace products; (4) aircraft conversion (i.e., major modifications to systems); and (5) complete aircraft or propulsion systems overhaul and rebuilding (i.e., periodic restoration of aircraft to original design specifications).[1]

Major companies include US-based Boeing, General Dynamics, Lockheed Martin, Northrop Grumman, and Raytheon, as well as Airbus Group (the Netherlands), BAE Systems (the UK), Bombardier (Canada), and Finmeccanica (Italy). Many companies work primarily as subcontractors to the largest manufacturers. [2]

Aircraft manufacturing accounts for about 55 percent of US industry revenue; aircraft engines and other parts for about 35 percent; and missiles and space vehicles for about 10 percent.[2]

Certain aerospace firms, such as Boeing, GE Aviation, and Airbus, are qualifying Additive Manufacturing (AM) processes and materials for flight. Boeing now has 200 different AM part numbers on 10 production platforms for both military and commercial jets. Aurora Flight Sciences and Stratasys fabricated and flew a 62-inch wingspan aircraft with a wing composed entirely of AM components. The wing was designed by Aurora and manufactured by Stratasys utilizing their Fused Deposition Modeling (FDM) 3-D printers.[3]

Industry Model

A strategic management model helps to portray the industry's competitive threats. Porter's Five Forces model, shown below, categorizes impacts from competitors, buyers, suppliers, substitutes and new entrants. Each of these can be qualitatively scored to assess the significance of these forces on Aerospace Products and Parts Manufacturing.

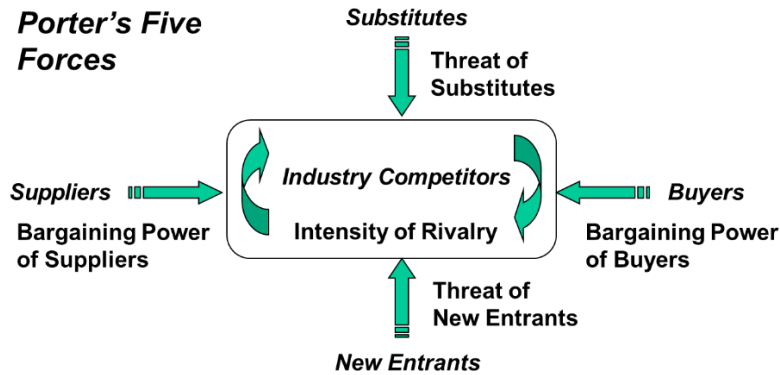


Figure 1. The Five Competitive Forces That Shape Strategy [4]

Competitive Landscape

Demand is driven by military budgets and the overall economic climate, which affects airline traffic and demand for new commercial aircraft. The profitability of individual companies depends on technical expertise and the ability to accurately price long-term contracts. Large companies enjoy economies of scale in design, manufacturing, and purchasing. Small companies can compete effectively by concentrating on selected components and parts manufacturing for particular prime contractors. Increasingly, small companies are developing system integration capabilities as large firms outsource more aspects of contracts. The US industry is highly concentrated: the 20 largest companies account for about 90 percent of industry revenue. [5]

Current Threat Assessment ¹

- **Threat of New Entrants:** HIGH barriers to entry due to intensive capital investment, need for economies of scale, strict regulation, research and development investment, and contract based sales with government entities. Dual use of commercial products within government and industry could shift bias lower.
- **Threat of Substitutes:** LOW due to limited number of producers and customized product choices, with most products being order-specific. Switching costs are also high, but price-performance tradeoff of substitutes could present opportunities.
- **Bargaining Power of Suppliers:** HIGH-MED due to advanced technology used in parts, long lead times for production, and contracts used for sales. Also, few producers in the market with different product lines serving different needs. Foreign suppliers and US Government influences in the manufacturing process could reduce this threat.
- **Bargaining Power of Buyers:** MED-LOW due to many airlines purchasing aircraft and few qualified producers. However, negotiations on price exist for large buyers, bids for government contracts, emergence of non-US suppliers.

¹ Scoring levels include LOW, MED-LOW, MED, HIGH-MED, and HIGH.

- Intensity of Rivalry: MED primarily due to tempering influences of high concentration ratio, long-term contracts, sustainable market growth, and significant brand identification/differentiation. Some upward bias given high strategic stakes and high exit barriers. Some niche market US participants and European competition also increase intensity. [5]

References

- [1] <http://naics-codes.findthedata.com/l/568/Aerospace-Product-and-Parts-Manufacturing>
- [2] <http://www.hoovers.com/industry-facts.aerospace-products-parts-manufacturing.1001.html>
- [3] <http://www.sme.org/MEMagazine/Article.aspx?id=49511>
- [4] <http://www.quickmba.com/strategy/porter.shtml>
- [5] <http://www.firstresearch.com/Industry-Research/Aerospace-Products-and-Parts-Manufacturing.html>

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