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**787 Dreamliner teaches Boeing costly lesson on outsourcing**

**The airliner is billions of dollars over budget and about three years late. Much of the blame belongs to the company's farming out work to suppliers around the nation and in foreign countries.**

February 15, 2011|Michael Hiltzik

The biggest mistake people make when talking about the outsourcing of U.S. jobs by U.S. companies is to treat it as a moral issue.

Sure, it's immoral to abandon your loyal American workers in search of cheap labor overseas. But the real problem with outsourcing, if you don't think it through, is that it can wreck your business and cost you a bundle.

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Case in point: Boeing Co. and its 787 Dreamliner.

The next-generation airliner is billions of dollars over budget and about three years late; the first paying passengers won't be boarding until this fall, if then. Some of the delay stems from the plane's advances in design, engineering and material, which made it harder to build. A two-month machinists strike in 2008 didn't help.

But much of the blame belongs to the company's quantum leap in farming out the design and manufacture of crucial components to suppliers around the nation and in foreign countries such as Italy, Sweden, China, and South Korea. Boeing's dream was to save money. The reality is that it would have been cheaper to keep a lot of this work in-house.

The 787 has more foreign-made content — 30% — than any other Boeing plane, according to the Society of Professional Engineering Employees in Aerospace, the union representing Boeing engineers. That compares with just over 5% in the company's workhorse 747 airliner.

Boeing's goal, it seems, was to convert its storied aircraft factory near Seattle to a mere assembly plant, bolting together modules designed and produced elsewhere as though from kits.

The drawbacks of this approach emerged early. Some of the pieces manufactured by far-flung suppliers didn't fit together. Some subcontractors couldn't meet their output quotas, creating huge production logjams when critical parts weren't available in the necessary sequence.

Rather than follow its old model of providing parts subcontractors with detailed blueprints created at home, Boeing gave suppliers less detailed specifications and required them to create their own blueprints.

Some then farmed out their engineering to their own subcontractors, Mike Bair, the former head of the 787 program, said at a meeting of business leaders in Washington state in 2007. That further reduced Boeing's ability to supervise design and manufacture. At least one major supplier didn't even have an engineering department when it won its contract, according to an analysis of the 787 by the European consortium Airbus, Boeing's top global competitor.

Boeing executives now admit that the company's aggressive outsourcing put it in partnership with suppliers that weren't up to the job. They say Boeing didn't recognize that sending so much work abroad would demand more intensive management from the home plant, not less.

"We gave work to people that had never really done this kind of technology before, and then we didn't provide the oversight that was necessary," Jim Albaugh, the company's commercial aviation chief, told business students at Seattle University last month. "In hindsight, we spent a lot more money in trying to recover than we ever would have spent if we tried to keep many of the key technologies closer to Boeing. The pendulum swung too far."

Some critics trace Boeing's extreme appetite for outsourcing to the regimes of Harry Stonecipher and Alan Mulally.

Stonecipher became Boeing's president and later chief executive after its 1997 merger with McDonnell- Douglas, where he had been CEO. Mulally took over the commercial aviation group the following year and is now CEO of Ford. The merged company appeared to prize short-term profits over the development of its engineering expertise, and began to view outsourcing too myopically as a cost-saving process.

That's not to say that outsourcing never makes sense — it's a good way to make use of the precision skills of specialty manufacturers, which would be costly to duplicate. But Boeing's experience shows that it's folly to think that every dollar spent on outsourcing means a cost savings on the finished product.

Boeing can't say it wasn't warned. As early as 2001, L.J. Hart-Smith, a Boeing senior technical fellow, produced a prescient analysis projecting that excessive outsourcing would raise Boeing's costs and steer profits to its subcontractors.

Among the least profitable jobs in aircraft manufacturing, he pointed out, is final assembly — the job Boeing proposed to retain. But its subcontractors would benefit from free technical assistance from Boeing if they ran into problems, and would hang on to the highly profitable business of producing spare parts over the decades-long life of the aircraft. Their work would be almost risk-free, Hart-Smith observed, because if they ran into really insuperable problems they would simply be bought out by Boeing.

What do you know? In 2009, Boeing spent about $1 billion in cash and credit to take over the underperforming fuselage manufacturing plant of Vought Aircraft Industries, which had contributed to the years of delays.

"I didn't dream all this up," Hart-Smith, who is retired, told me from his home in his native Australia. "I'd lived it at Douglas Aircraft."

As an engineer at McDonnell-Douglas' Long Beach plant, he said, he saw how extensive outsourcing of the DC-10 airliner allowed the suppliers to make all the profits but impoverished the prime manufacturer.

"I warned Boeing not to make the same mistake. Everybody there seemed to get the message, except top management."

The company's unions have also kept singing an anti-outsourcing chorale. "We've been raising these questions for five years," says Tom McCarty, the president of the Boeing engineers' union. "How do you control the project, and how do you justify giving these major pieces of work to relatively inexperienced suppliers? There's no track record of being able to do this."

It would be easier to dismiss these concerns as those of unions trying to hold on to their jobs if they hadn't been validated by the words of Boeing executives themselves. A company spokeswoman told me that it's not giving up on outsourcing — "we're a global company," she says — but is hoping for a "continued refinement of that business model." Yet Albaugh and other executives acknowledge that they've blundered.

"We didn't want to make the investment that needed to be made, and we asked our partners to make that investment," Albaugh told his Seattle University audience. The company now recognizes that "we need to know how to do every major system on the airplane better than our suppliers do."

One would have thought that the management of the world's leading aircraft manufacturer would know that going in, before handing over millions of dollars of work to companies that couldn't turn out a Tab A that fit reliably into Slot A. On-the-job training for senior executives, it seems, can be *very* expensive.

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