

Research

Apple Gets More Bang For Its R&D Buck

- ▶ **Other companies contribute a lot of the baseline research**
- ▶ **“Suppliers are racing with each other to get Apple’s business”**

Silicon Valley is aglow from so-called moonshots. Google’s parent company, **Alphabet**, is building autonomous vehicles, life-extending drugs, and animal-look-alike robots. **Facebook** is developing Internet-beaming drones and virtual-reality headsets, while **Microsoft** has unveiled hologram glasses and is chasing breakthroughs in

camera modules, and graphics processors, up from \$24.5 billion last year. “Suppliers are racing with each other to get Apple’s business, and part of the racing they are doing is spending more on R&D,” Mudambi says.

Apple knows it can’t rely on its suppliers for everything. It’s expanded research outlays significantly over the past three years, to \$8.1 billion in fiscal 2015, up from \$6 billion in 2014 and \$4.5 billion in 2013. One of the biggest investments has been in the proprietary semiconductors at the heart of the iPhone and iPad. The latest A9 chip, built for the iPhone 6S and iPad Pro, is faster than any chip on the market made by leading semiconductor companies. Apple’s workforce has also increased sharply over the past few years; as of Nov. 20, the company had 135 chip-related job openings for engineers and designers. The growing research budget hints at future products, such as the company’s rumored car.

Research isn’t the whole story, either. Apple laid out \$11.2 billion in 2015 on capital equipment, mostly things like tooling and manufacturing gear. Such expenditures, which include the construction of a space-shiplike corporate headquarters, will hit \$15 billion in 2016. While other companies make a bigger show of their projects, “Apple’s work is in secret. It is substantial and calibrated by market opportunity,” says Horace Dediu, founder of researcher Asymco.

Apple’s relative thriftiness extends to its vaunted advertising and marketing operations. The company spent \$3.5 billion on advertising and marketing over the past four quarters, while Google spent about \$8.8 billion in the past three. R&D spending isn’t worthwhile if it never leaves the lab, says Tim Swift, a business professor at St. Joseph’s University in Philadelphia. “Apple’s products are going through some of the most effective and sophisticated marketing we’ve ever seen,” he says. “That’s the other half of what makes Apple the most productive R&D spender.” —*Adam Satariano*

The bottom line Apple has doubled its R&D spending since 2013. It still spends a smaller portion of revenue than any other big U.S. tech company.