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No Relationship Between R&D Spending and Sales Growth, Earnings, or Shareholder Returns

Analysis of the top 1,000 global innovation spenders finds accelerated investment in R&D - $384 billion in 2004.

NEW YORK, October 11, 2005 — There is no direct relationship between R&D spending and significant measures of corporate success such as growth, profitability, and shareholder return, according to a new global innovation study by Booz Allen Hamilton entitled "Global Innovation 1000—Money Isn't Everything." However, the pace of corporate R&D spending continues to accelerate, as many executives continue to believe that enhanced innovation is required to fuel their future growth.

Booz Allen analyzed the world's top 1,000 corporate research and development spenders—the Booz Allen Global Innovation 1,000—to identify the linkages between spending on innovation and corporate performance, and to uncover insights on how organizations can get the greatest return on their innovation investment. Key findings of the study include:

Money doesn't buy results. While the study identified individual success stories, there is no discernable statistical relationship between R&D spending levels and nearly all measures of business success, including sales growth, gross profit, operating profit, enterprise profit, market capitalization, or total shareholder return.

- R&D spending appears to yield better gross margins, the percentage of revenue left over after subtracting the direct costs incurred in making the products or services sold. This narrow departmental success, however, is not generally translated into overall corporate performance.

"There is no easy way to achieve sustained innovation success-you can't spend your way to prosperity," said Booz Allen Vice President Barry Jaruzelski. "Successful innovation demands careful coordination and orchestration both internally and externally. How you spend is far more important than how much you spend."

But innovation spending is still a growth business. The 2004 Global Innovation 1,000 spent $384 billion on R&D in 2004, representing 6.5% annual growth since 1999.

- And the pace is accelerating-measured from 2002, the annual growth rate jumps to 11.0%.

Larger organizations have an advantage. Scale provides an edge in innovation; larger organizations are able to spend a smaller proportion of revenue on R&D than smaller organizations with no discernable impact on performance.

Spending more doesn't necessarily help, but spending too little will hurt. Companies in the bottom 10% of R&D spending as a percentage of sales under-perform competitors on gross margins, gross profit, operating profit, and total shareholder returns. However, companies in the top 10% showed no consistent performance differences compared to companies that spend less on R&D.

R&D spending by companies in developing nations is relatively small, but growing rapidly. While companies headquartered in North America, Europe, and Japan account for 96.8% of the Global Innovation 1,000's R&D spending, and are likely to remain dominant players for the foreseeable future, companies with headquarters in China, India, and the rest of the world are turning up the volume on R&D investment.

- The annual growth rate for R&D spending from 1999 to 2004 in China and India was 21.1%, significantly higher than in North America (6.6%), Europe (6.2%), and Japan (4.8%). These lower growth rates are likely functions of the relative maturity of companies in these countries and the magnitude of their current spending.
- However, the developed economies show a higher ratio of R&D spending to sales. Here China and India lag, spending only 1% of revenue on R&D, compared with 4.9% for firms in North America, 4% in Europe, and 3.8% in Japan. The differences among the three main spend regions are partially explained by differences in industry mix.

Industries can't agree on how much innovation spending is enough. Instead of clustering into any coherent pattern, R&D spending levels vary substantially, even within industries.

It's the process, not the pocketbook. Superior results seem to be a function of the quality of an organization's innovation

process—the bets it makes and how it pursues them—rather than either the absolute or relative magnitude of its innovation spending. For example, Apple's 2004 R&D-to-Sales ratio of 5.9% trails the computer industry average of 7.6%, and its $489 million spend is a fraction of its larger competitors. But by rigorously focusing its development resources on a short list of projects with the greatest potential, the company created an innovation machine that eventually produced the iMac, iBook, iPod, and iTunes.

"The competitive value of a fast and effective innovation engine has never been greater," said Kevin Dehoff, Booz Allen Vice President, noting the trend toward shorter product life cycles and an ever-faster flow of new offerings. "Yet of all the core functions of most companies, innovation may be managed with the least rigor. The key is to identify the priority areas where process improvements will have the greatest impact."

Additional study findings include:

- R&D spending is highly concentrated. While the top 1,000 corporate R&D spenders invested $384 billion in 2004, the second 1,000 spent only $26 billion-only an additional 6.8% beyond the top 1,000 spenders.
    - As a result, Booz Allen estimates that the Global 1,000 captures between 80-90% of total global corporate R&D spending, and approximately 60% of total global R&D, including spending by governments.
- The top 10 global R&D spenders in 2004 are, in descending order: Microsoft, Pfizer, Ford, DaimlerChrysler, Toyota, General Motors, Siemens, Matsushita Electric, IBM, and Johnson & Johnson.
- On average, the Global Innovation 1,000 spends 4.2% of its revenue on R&D. This average has been relatively stable over the last five years studied.
- Patents don't always lead to profits. In a separate analysis, Booz Allen found no relationship between the number of patents issued to an organization and its performance.
- R&D spending is heavily concentrated in the Technology, Health, and Automotive sectors. Computing & Electronics tops the list representing 25% of total spend by the Global 1,000; Health follows with 20%, and Auto with 18%.
- Software & Internet, at 15% per annum, and Health at 12.4% have experienced the fastest pace of R&D growth over the past five years, while Telecom (2.2%) and Chemicals & Energy (1.4%) have grown the slowest.

Booz Allen Hamilton Global Innovation 1,000: Study Methodology

Booz Allen Hamilton identified the top 1,000 global public companies in Research and Development spending in 2004 for companies reporting their spend. The study then analyzed data for the past six years on a variety of financial metrics, including: revenue, gross profit, SG&A expenses, operating profit, net profit, capital expenditures, and historical R&D spending. The study also assessed shareholder value measures including total shareholder return (TSR) and market value growth for the same time period.

Each company was coded into one of 10 industry sectors or "other" and six country/regions based on Bloomberg's industry designations and reported headquarters locations, since R&D spending is only rarely broken out by subsidiary or region in corporate financial statements. For example, R&D spending for Chrysler conducted in the United States would be reported in Europe, given DaimlerChrysler's German headquarters.

To enable meaningful comparisons across industries on R&D spending levels, Booz Allen indexed the R&D spending level for each industry against the median R&D spending level for that industry. Similarly, to avoid skewing shareholder returns analysis by differences in performance across regional stock markets, shareholder returns data was adjusted to show the corporation's performance relative to that of a leading index of its regional market.

Additional Information:

- Innovation's OrgDNA (.PDF 621KB)