

# SMALL BUSINESS

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# RESEARCH SUMMARY

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## Survey of High Technology Firms

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### Purpose

The main objective of the project was to create a database and analyze the origins, finance, research and development, and other innovation activities of small firms in high-technology sectors.

Although large established businesses account for a sizable share of industrial innovation in the United States, it is also recognized that small businesses play a special role in the process by which new technologies are ultimately brought to the marketplace.

This research project was designed to increase what is known about the activities, problems, and characteristics of small high-technology firms.

### Scope and Methodology

For this study, 1,053 firms in six industries were surveyed. The CorpTech database of high-technology firms provided the basis for our sample. Five industries selected were in the high-technology area (Biotechnology, Advanced Materials, Subassemblies, Testing and Measurement, and Telecommunications). The sixth industry was Factory Automation, which was selected because it purchases and uses high technology products.

A survey was sent to each of the firms, and a follow-up re-mailing was made to all of those who did not respond. A total of 198 small firms sent in completed surveys. The quality of the surveys that were returned was excellent.

The survey was divided into five parts. The first set of questions focused on the major characteristics of the firm including sales, ownership, number of employees, and competitive position in the industry. The second set of questions were about the history of the firm and the reasons the founder established the company. Third, the questions focused on the finances of the firm, particularly on sources of equity capital and the barriers small firms face in raising capital. In this section, there were also specific questions about the Research and Experimentation (R&E) tax credit. The fourth section focused on the research and development efforts of the firm, use of the Small Business Innovation Research (SBIR) program, and the firm's approach to market penetration and protection of its intellectual property. The final section focused on how the firm acquires new technology and on the firm's approach to joint ventures and technology alliances.

### Highlights

- Although the responding firms were "young" they were not "new." One quarter of the companies had been in business for less than 10 years, and the average age of the firms was 25 years. Two-thirds of the founders of these businesses still owned the company and only one-fifth of the founders were no longer associated with the firm, primarily because they were had either retired or were deceased.

- Eighty-seven percent of the companies were independent start-ups, with 44 percent of the founders establishing the firm in the same industry in which they were previously employed.
- Most of the firms were closely held corporations; less than 10 percent of the firms had publicly traded stock. Most firms had domestic sales that were less than \$5 million in 1997.
- About three-quarters of the firms reported foreign sales, but only 60 percent considered foreign sales to be important.
- The firms were started for very traditional reasons. There was a clear perception of a business opportunity through the development of a new product (new processes and services being far less often mentioned as the motivation), coupled with the entrepreneur's quest for both independence and financial reward.
- Respondents to the survey became profitable quickly after they were founded. Nearly 90 percent of the firms had recorded their first sale within one year of founding and two-thirds of the firms had profits by the second year of their existence. The firms described their competitive advantage as offering better quality and better service and being more flexible than their competitors.
- Of interest is that more than half of the firms considered their price equal to or higher than their competitors. More than half reported that they had no advantage over their competitors in their costs of production.
- The most frequent reason these firms obtained loans was for expanding production or for purchasing equipment. Loans were not often obtained (or available) to develop an initial concept or for making a prototype. Over half of the firms in our survey looked to banks for loans. Shareholders and insiders were responsible for the sources of most of the other short and long-term financing. Fifteen firms reported that they had SBA guaranteed loans.
- About one-third of the firms were initially financed by equity alone and more than 60 percent of the firms indicated that the owners or managers had contributed over half of the firm's equity. This is consistent with the ownership profile of the companies—most being closely held businesses.
- These smaller high-technology companies did not report sizable benefits from the R&E tax credit. Sixty-three percent of the companies had not claimed the R&E tax credit. Only 16 companies reported that the tax credit actually increased their spending on research and development. However, some of the companies that did use the tax credit reported that its main benefit was to increase cash flow.
- Although two-thirds of the surveyed companies had fewer than five research and development (R&D) employees, most R&D was reported to be performed internally. Only 40 percent of the companies did any contracting-out for R&D. New ideas were either developed internally or came from suppliers and customers.
- The technology and ideas from government and not-for-profit firms was not reported as being important to these firms. However, over one-third of the respondents had applied for SBIR awards.
- About twenty percent of the responding companies rated R&D partnerships as an effective method to obtain new technology. More than half had entered into one or more agreements during the five years prior to the survey. Customer/supplier linkages were the most popular. Alliances focusing on production or marketing were used more frequently than those for basic research.
- The companies cited the high costs of getting a patent and problems in patent enforcement as the reasons for not regarding patents as being very important to them. The firms tended to focus more on using trade secrets and being first to the market with a new product.

## Ordering Information

The complete report, along with research summaries of other studies performed under contract to the SBA Office of Advocacy, is available on the World Wide Web at: [www.sba.gov/advo/research](http://www.sba.gov/advo/research)

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