



THE MANUFACTURING EXTENSION PARTNERSHIP
Delivering Measurable Returns to Its Clients

MAY 2002

NIST

National Institute of Standards and Technology
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Delivering Measurable Returns to Its Clients

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I. INTRODUCTION

A. The Manufacturing Extension Partnership

Created in 1988, the Manufacturing Extension Partnership (MEP), a program of the U.S. Department of Commerce's National Institute of Standards and Technology, seeks to improve the productivity, economic competitiveness and technological capabilities of America's manufacturers, particularly small manufacturers. MEP is a results-based network of locally operated, staffed and controlled non-profit and university-based organizations leveraging federal, state and local, and private resources. These centers provide critical services and assistance to meet clients' strategic needs now and into the future.

This partnership among the federal government, state and local governments, and the private sector has nearly 400 manufacturing extension offices providing services across the country and in Puerto Rico. MEP delivers its services on the shop floor of manufacturing firms. Each center works directly with local firms to provide expertise and services tailored to their most critical needs, ranging from process improvements and employee training to adopting new business practices and the application of information technology in their companies. MEP services are provided through a combination of direct assistance from center staff and assistance from outside consultants.

MEP is evolving. Driven by customer and market demands, MEP constantly refines and improves its products, services and service-delivery approaches. Just like the manufacturers we work with, the MEP

program has transformed because of the changing manufacturing marketplace. MEP's work with its clients focuses on technology, training, and technical assistance.

Since the program began, clients have used the NIST MEP program more than 149,000 times. In fiscal year 2001, MEP centers assisted over 21,000 clients in areas including business systems, human resource management, process improvement, product development and market development.

B. Small Manufacturers and Their Challenges

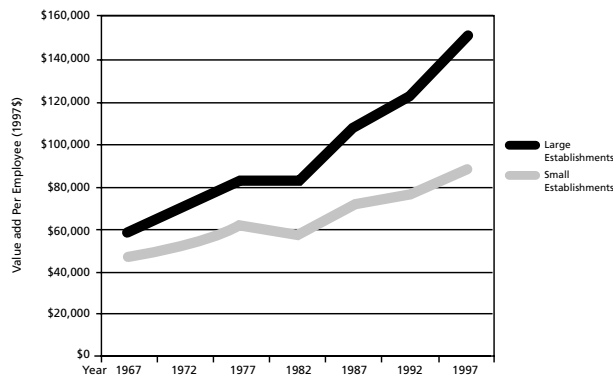
MEP's primary clients, the over 350,000 U.S. small manufacturing establishments, are important cornerstones of the U.S. economy and contribute mightily to national and economic security.¹ Diversity, geographic dispersion and complexity characterize the small manufacturing marketplace. Small manufacturers represent a critical national economic resource: they represent 98 percent of all manufacturing establishments, account for two-thirds of all manufacturing employment and employ nearly 11.3 million people, and account for over half of the total value-added by all U.S. manufacturers.

Critical as they are to the national economy, smaller manufacturers are less likely than larger firms to understand and implement new technology, adopt modern manufacturing processes, and deploy current business practices. Lacking the information networks and resources available to large firms, the productivity gap between small and large manufacturers widens as highlighted in Figure 1.

¹ For additional information, see National Association of Manufacturers and The Manufacturing Institute, *Today's Small and Medium Manufacturers: Powerful, Flexible and the Lifeblood of Their Communities*. 2001.

Figure 1

THE PRODUCTIVITY GAP BETWEEN SMALL AND LARGE MANUFACTURING ESTABLISHMENTS IS GROWING, 1967-1997*



*Source: *Census of Manufacturers, U.S. Census Bureau.*

The relationship between large and small firms is becoming more complementary and cooperative rather than competitive. As large firms increase their dependence on suppliers for parts and services, the performance and capabilities of small manufacturers is even more important to the competitiveness of all manufacturers and to the health of the U.S. economy. Further, large manufacturers are requiring small firms to meet increasingly rigorous quality standards. Failure to comply can prevent small firms from participating in these important products markets.

II. THE SURVEY PROCESS

A. Survey Purpose

Since 1996, NIST MEP has sponsored a national survey of center clients by an independent third party. The survey asks clients to comment on the business impact of the services provided by their local center. NIST MEP surveys center clients for two primary purposes:

- Collect aggregate information on program performance to report to various stakeholders as indicators

of program performance. The survey provides information about the quantifiable impact on client firms of the services provided by MEP centers. NIST MEP also conducts other studies to evaluate the system's impact that corroborate and complement the survey results.

- Provide center-specific program performance and impact information for center use. Centers use this information to communicate results to their own stakeholders, at both the state and federal level. Center management and NIST MEP use these results to evaluate center performance and effectiveness. The MEP Center Review Criteria and review process place a strong emphasis on a center's ability to demonstrate impacts and uses the survey results in its program reviews.

The survey results also provide MEP centers with a tool to measure their center's performance and effectiveness and benchmark their performance against other centers and performance standards. In addition, the data allow NIST MEP to gauge the impact of the national MEP network on America's manufacturers and its impact on the national and regional economies.

B. Survey Methods

Market Facts Inc., a subsidiary of Aegis Group PLC, a leading U.S.-based full service global market research company, conducts the survey for MEP. Founded in 1946, Market Facts is one of the top ten global custom marketing research companies. With substantial survey experience and over 500 employees, they bring the most modern survey-related technology to the project. Market Facts provides services to many companies and its clients include General Motors, Fidelity Investments, American Express, ExxonMobil, Proctor & Gamble, State Farm Insurance, Bristol-Meyers Squibb, Kaiser Permanente and AT&T.

Market Facts surveys MEP clients four times each fiscal year. The survey asks clients to consider the entire set of projects or services provided by a center over the last three years (and any current projects not listed) and to comment on how their company's

¹ For additional information, see National Association of Manufacturers and The Manufacturing Institute, *Today's Small and Medium Manufacturers: Powerful, Flexible and the Lifeblood of Their Communities*, 2001.

performance and processes have been affected in the last 12 months. The survey asks clients to comment on the impact of MEP services in the following areas:

- Client satisfaction with the services provided;
- Bottom-line client outcomes and impacts such as productivity increases, sales, technology, capital investment and cost savings; and Intermediate outcomes in areas such as internal operations and processes, sales and marketing, human resources, information and management systems.

The survey has 20 questions and takes, on average, 10-12 minutes to complete. A copy of the survey form and the questions is included in the appendix.

Clients are selected for the survey based on when the firm completed its first project with a center and are called about 12 months later. For instance, if a client's project closed on March 15, 2000, this client would be surveyed in the first quarter of 2001. Clients completing multiple projects with a center in a year are surveyed only once a year. While clients are selected based on when a project was completed with a center, the survey is client-based rather than project-based.

MEP and Market Facts use several tools and techniques to minimize both response and non-response bias to the survey. Response bias may arise because of inaccurate responses to particular questions and non-response bias may arise due to errors reflecting an unrepresentative sample of MEP clients actually being interviewed because some clients refuse to participate or cannot be reached before the close of the survey.

Several steps were taken to limit response bias. This includes informing the clients that they were selected for an interview and encouraging their participation in the study. A letter is sent to each client announcing that they have been selected for the survey and that Market Facts will be contacting them shortly to ask them about their experience and the outcomes of their work with a center. We also follow-up with non-respondents during the survey period to encourage their participation. In addition, interview procedures include many

“call attempts” to reach a client to complete an interview, calling at different times and on different days, setting an appointment with clients who requested this, and calling over a four-week period.

Additional steps were undertaken to limit non-response bias. All interviewers used the same survey instruments and had written references for questions that may arise in the course of an interview. The survey uses Computer Assisted Telephone Interviewing (CATI) procedures that include scripting how each question is asked to ensure comparability from interviewer to interviewer and from MEP customer to MEP customer. In addition, interviewer training was done before each survey to review the procedures, questions, terms, definitions and the purpose and goals of the study. MEP and Market Facts staff did regular monitoring of the interviews.

In addition to completing the survey through a phone interview, clients have the option of completing the survey via an Interactive Voice Response (IVR) system that exactly follows the CATI telephone script. In FY 2000, CATI interviews represented 85 percent of the completed surveys and 15 percent were completed using the IVR option. A small number of surveys, less than one percent, were completed in Spanish and in Cantonese.

Table 1 provides information on the number of interviews conducted in each survey period and the number that completed an interview. The survey response rate was 72.1 percent.²

² Appendix One compares the characteristics of the clients that responded to the survey and those that did not to explore if there are indications of potential response bias. Appendix Two examines the confidence intervals for the survey results. Appendix Three provides a copy of the actual survey instrument and the results for each question based on the client responses.

Table One**DISTRIBUTION OF INTERVIEWS BY SURVEY PERIOD AND RESPONSE RATES**

Survey Period	Number of Clients Attempted	Number of Interviews Completed	Survey Response Rate
Jan. 17 – Feb. 14, 2001	1,824	1,238	67.9%
April 17 – May 14, 2001	1,604	1,249	77.9
July 17, - Aug. 14, 2001	1,876	1,344	71.6
Oct. 17 – Nov. 14, 2001	1,480	1,060	71.6
Total	6,784	4,891	72.1%

III. CLIENT IMPACT SURVEY RESULTS**A. Bottom-Line MEP Client Impact Results**

The program delivers measurable returns to its clients. The services provided make a positive contribution to improvements in client competitiveness, productivity and the bottom line. Table 2 provides additional detail on the productivity improvements reported by MEP clients. Tables 3 through 5 provide more detail on the bottom-line impacts reported by the 4,891 MEP clients interviewed.

After receiving services:

- **MEP clients improved their productivity and increased their economic competitiveness.** Sixty-four percent of the clients responding to the survey reported productivity improvements in at least one of the four broad dimensions of productivity. Nearly half of the clients reported improvements in process productivity and over 41 percent of the clients surveyed reported that either material or capital productivity improved because of services provided. Over one in three clients reported that labor productivity increased (See Table 2). Seventy-one

percent of the respondents said their company was more competitive because of the services they received in FY 2000.

Table Two**PRODUCTIVITY IMPROVEMENTS REPORTED BY MEP CLIENTS (*n=4,891 clients*)**

Productivity Measure	Percent of Clients Reporting
Process productivity improvement	47%
Material productivity improvement	43%
Capital productivity improvement	41%
Labor productivity improvement	34%
Some aspect of productivity improved	64%

- **MEP services had a significant impact on company sales.** As a result of the services provided to MEP clients, 45.2 percent of all clients responding to the survey reported that their company experienced a sales impact by either increasing their sales or retaining sales that otherwise would have been lost. Twenty-six percent of the clients reported that their company gained new sales revenue and 43 percent of the clients responded that they were able to retain sales that otherwise would have been lost. In total, these companies reported that MEP services resulted in nearly \$2.3 billion in sales impact. MEP services generated over \$698 million in new sales and MEP services helped clients retain over \$1.5 billion in sales during FY 2000 (See Table 3).

Table Three

DID THE SERVICES YOU RECEIVED DIRECTLY LEAD TO ANY OF THE FOLLOWING DIFFERENCES IN SALES AT YOUR ESTABLISHMENT IN THE LAST 12 MONTHS? (*n=4,891 clients*)

Sales Impact	Percent of Clients Reporting	Total Impacts Reported
Increased Sales	25.9%	\$698.4 million
Retained Sales	42.7%	\$1.58 billion

- MEP helped its clients retain and create jobs. MEP services led 39 percent of the clients surveyed in FY 2000 to create new jobs or retain jobs that would have otherwise been lost. Twenty-nine percent of the clients reported that these services helped them retain jobs that would have been lost if not for the services and 24 percent reported that the services led them to create new jobs. MEP clients retained and created over 25,000 jobs. In FY 2000, MEP clients reported over 9,000 new jobs and nearly 16,300 retained jobs (*See Table 4*).

Table Four

DID THE SERVICES YOU RECEIVED DIRECTLY RESULT IN ANY OF THE FOLLOWING CHANGES IN EMPLOYMENT LEVELS OVER LAST 12 MONTHS? (*n=4,891 clients*)

Employment Impact	Percent of Clients Reporting	Total Impacts Reported
Retained Jobs	28.9%	16,266 jobs
Creation of New Jobs	24.1%	9,058 jobs

- MEP Clients' reported significant cost savings. Two out of three MEP clients surveyed (66.8 percent) said that the services helped them save money in areas such as labor, materials, inventory, energy and investments or by helping them avoid unnecessary investments. MEP clients realized just under

\$482 million in total cost savings in FY 2000 (*See Table 5*).

Table Five

DID THE SERVICES YOU RECEIVED DIRECTLY RESULT IN COST SAVINGS IN LABOR, MATERIAL, INVESTMENTS, MATERIALS, ENERGY, OVERHEAD OR OTHER AREAS OVER WHAT WOULD OTHERWISE HAVE BEEN SPENT IN THE PAST 12 MONTHS? (*n=4,891 clients*)

Cost Savings Impact	Percent of Clients Reporting	Total Impacts Reported
Labor, material, overhead, inventory, energy, etc.	60.0%	\$246.1 million
Cost Savings on Investments Made or Avoided	40.1%	\$235.8 million

- MEP services leveraged new client investment. Two-thirds (66.5 percent) of all clients reported that they increased investment in some key area of their operations. MEP services leveraged significant new investments among its clients totaling over \$873 million. The bulk of new investments reported by clients was in traditional plant and equipment; but an increasing share of the new investment reported by clients was in more intangible areas such as employee skills, information systems, and research and development. New investments of over \$589 million were made in plant and equipment, nearly \$93.3 million of new investment in information systems and software, and \$38.7 million in workforce training and work force practices. Over \$151 million in new investments were made in other areas including research and development. (*See Figure 5*)

Table Six

AS A RESULT OF THE SERVICES YOU RECEIVED, HAS YOUR ESTABLISHMENT INCREASED ITS INVESTMENTS OVER THE PAST 12 MONTHS? (*n=4,891 clients*)*

New Investment Impact	Percent of Clients Reporting	Total Impacts Reported
<i>Plant and Equipment</i>	34.2%	\$589.2 million
<i>Information systems and software</i>	31.0%	\$93.2 million
<i>Workforce practices and employee skills</i>	48.6%	\$38.7 million
<i>Other areas of business</i>	11.5%	\$151.8 million

*Source: NIST MEP Client Impact Survey.

B. Intermediate Client Impacts

The results below focus on the intermediate outcomes reported by MEP clients. The program is helping firms increase their agility, saving them time and money, and contributing to important improvements in product quality, workplace practices, information systems and increasing the efficiency and effectiveness of internal operations. These improvements are also key ingredients in boosting productivity growth.

- **Almost all clients reported important business performance improvements.** Nearly 84 percent of the clients responding to the survey reported that one or more key business performance metric improved as a result of the services provided to them including improvements in areas such as profitability, productivity, sales, cost savings, investment, or jobs.
- **Most clients say the services led them to take improvement actions that they would not have taken and took action more quickly.** Seventy percent of the clients surveyed reported that the services led them to take actions that they would not otherwise have taken. Over three-quarters of the clients responding said that they took actions more quickly as a result of the projects completed.

Moreover, nearly 62 percent of the clients reported that they took actions at a lower cost.

- **Clients reported important improvements in manufacturing systems.** Product quality and time to market represent key competitive edges for many manufacturers. Seventy-nine percent of the clients responding reported that throughput (the total volume of production through a plant) increased in their company. Sixty-nine percent of the clients reported that the services improved product quality and 68 percent reduced lead-time.
- **MEP clients report important improvements in human capital and workplace practices.** Improving employee skills and adopting new workplace practices are important contributors to productivity growth. Eighty-five percent of the clients reported that employee skills improved because of the services provided and 81 percent of the clients said that the work environment for employees improved. Forty-three percent of the clients responding reported that MEP services helped them reduce employee turnover.
- **MEP is helping its clients better manage and use their information systems.** Investing in and improving how information technology is used is increasingly important in many industries and to many firms. Fifty-six percent of the clients responding to the survey reported that the services helped them better integrate their information systems with either suppliers or clients. Sixty-eight percent of those surveyed reported that their use or selection of information systems or technology improved as result of MEP services and 43 percent improved their e-commerce capabilities.
- **Clients report that MEP services have improved their management systems.** Improving management systems, such as better planning and improved understanding of cost-drivers, is important to firm performance. Three-fourths of the clients reported that their business and strategic planning improved and two-thirds of the clients reported that MEP

services improved their understanding of costs within their companies.

- **MEP clients are very satisfied with the services provided and they would use these services again.** Eighty-five percent of clients were very satisfied/satisfied with the quality of services they received from MEP. Mirroring these results, 84 percent of the clients definitely or probably would use MEP services again in the future.

IV. CONCLUSION

MEP focuses on its results and outcomes. It maintains its accountability to its clients and investors by asking the people with the best information – its clients – about the impacts of its work.

- ✓ MEP delivers measurable returns to its clients and its investors. Each year, MEP helps thousands of companies solve problems, increase productivity, achieve higher profits, and create and retain thousands of jobs. In FY 2000, MEP clients reported that these services led to:
 - Improving productivity among nearly two-thirds of MEP clients;
 - Retaining and creating over 25,000 jobs;
 - Helping companies retain and increase sales of \$2.3 billion;
 - Leveraging over \$873 million in new private sector investment; and
 - Saving its clients just under \$482 million in costs.
- ✓ Other studies demonstrate that MEP services contribute to improving the performance of its clients by increasing their competitiveness, boosting their productivity, generating bottom line benefits and producing a positive return on the public investment.³

- The Center for Economic Studies at the U.S. Census Bureau found that average MEP clients achieved an average of 5.2% higher productivity growth between 1996 and 1997 than non-clients and experienced 4.7% faster employment growth over the same period.⁴

MEP generates a positive return on its investment. MEP client outcomes translate into broader economic effects as well⁵: Gross Domestic Product in 2000 was \$7.6 billion higher than without the program, personal income was \$4.8 billion higher than without the program and employment was 114,000 higher. This same study showed that MEP services increase corporate and personal tax revenues both by significantly growing before-tax profits of small manufacturers and by stabilizing or growing the manufacturing workforce. A conservative estimate of the return on the MEP federal budget investment is that the MEP program generates a 4:1 return to the federal treasury.

The results from these other studies of the program reinforce and complement these survey findings. The survey data and these other studies continue to show that the program has a positive impact on the companies it works with and makes a positive contribution to local, state, and the U.S. economy.

³ See, for instance, U.S. Census Bureau, Center for Economic Studies, *The Impact of MEP on Manufacturing Plant Performance*, Draft, June 2001; Ronald S. Jarmin, "Evaluating the Impact of Manufacturing Extension on Productivity Growth," (1999), *Journal of Policy Analysis and Management*, Volume 18, No.1 pp.99-119 and Nexus Associates, *NIST MEP Program: Impact on the U.S. Economy in 2000* November 2, 2001.

⁴ U.S. Census Bureau, Center for Economic Studies, *The Impact of MEP on Mfg Plant Performance*, Draft, 1999.

⁵ The discussion about the broader economic impacts and the estimates of the return to the federal treasury are drawn from the following study: Nexus Associates. *NIST MEP Program: Impact on the U.S. Economy in 2000*, November 2, 2001.

**APPENDIX 1:
Characteristics of Respondents
and Non-respondents.**

The data in this report are from a representative cross-section of MEP clients. Those responding to the survey did not significantly differ from the larger population of all MEP clients that we tried to contact. Thus, the data reported are likely to be representative of the target population and represents a conservative and reasonable estimate of MEP program impacts. The data reported here represent actual responses from the clients reached and the data have not been weighted or missing data imputed.

Clients responding were more likely to have completed more projects, lasting longer and were, on average

smaller (as measured by employment) than non-respondents. The typical respondent completed 2.2 projects, representing 164 hours of substantive activity and had 157 employees. The typical non-respondent completed 1.8 projects, representing 124 hours of substantive activity and had 167 employees. Below is additional information regarding the characteristics and distribution of the survey respondents compared to non-respondents.

This appendix explores the characteristics of the population selected for survey and examines whether there were important differences among those that responded to the survey and those that did not respond to the survey. Overall, the characteristics of the respondents and non-respondents did differ but not significantly.

Appendix Table 1.1

**CHARACTERISTICS OF SURVEY RESPONDENTS & NON-RESPONDENTS
IN TERMS OF ESTABLISHMENT SIZE CATEGORY.**

Employment Size Category	Survey Respondents <i>(n=4,891)</i>	Survey Non-respondents <i>(n=1,893)</i>	Total Population <i>(n=6,784)</i>
0-19 employees	25.5%	26.7%	25.8%
20-99 employees	38.9%	35.7%	38.0%
100-249 employees	20.1%	21.1%	20.4%
250-499 employees	9.5%	9.9%	9.6%
More than 500 employees	6.1%	6.4%	6.2%

As this table suggests, the portion of clients responding to the survey closely tracks the distribution of the total population. Smaller clients (i.e., those with less than

100 employees) were slightly more likely to respond to the survey as compared to larger clients (those with 100 or more employees).

Appendix Table 1.2**CHARACTERISTICS OF SURVEY RESPONDENTS & NON-RESPONDENTS
IN TERMS OF COMPLETED PROJECTS.**

Number of Projects Completed	Survey Respondents (<i>n=4,891</i>)	Survey Non-respondents (<i>n=1,893</i>)	Total Population (<i>n=6,784</i>)
1 Project	50.9%	64.3%	54.6%
2 Projects	21.3%	17.9%	20.4%
3 or more Projects	27.8%	17.8%	25.0%

There appears to be a positive relationship between the number of projects completed with a client and the probability of responding to the survey. This table suggests that clients that had only one project with a

center were less likely to respond to the survey and those with two or more projects were more likely to respond to the survey.

Appendix Table 1.3**CHARACTERISTICS OF SURVEY RESPONDENTS & NON-RESPONDENTS
IN TERMS OF PROJECT LENGTH.**

Project Length	Survey Respondents (<i>n=4,891</i>)	Survey Non-respondents (<i>n=1,893</i>)	Total Population (<i>n=6,784</i>)
0-16 hours	18.4%	22.1%	19.5%
17-40 hours	20.8%	24.6%	21.8%
41- 80 hours	17.4%	18.2%	17.6%
81 – 120 hours	10.1%	10.0%	10.1%
Greater than 120 hours	33.3%	25.0%	31.0%

Paralleling the results above, there also appears to be a direct relationship between the overall length of all projects completed and the likelihood of responding to the survey. Clients with higher levels of involvement

with center staff were much more likely to respond to the survey compared to those that had shorter periods of involvement with the center.

APPENDIX 2: Standard Error of the Estimates.

Any sampling approach involves the possibility that the results reported could be different from the true characteristics of the full population from which the survey is drawn. While the survey is not a sample, not all clients respond to the survey so it is useful to present some information on the confidence intervals of our estimates. The likelihood that this is the case varies with two things: 1) the size of the sample, and 2) the observed distribution of the results in the sample. As far as the first is concerned, a sample size of 50 is generally regarded as the minimum necessary. As far as the latter is concerned, the closer to a 50-50 split that exists in the sample, the greater the likelihood that the sample result and the population result will diverge. Because of the large sample size, the confidence intervals around each reported result are very narrow.

To express the degree of confidence in the results relying on a sample, statisticians compute a “standard error of the estimate” and a “confidence interval” for the results. The confidence interval expresses the range on either side of an observed sample result that can be expected for the true value of the population to fall. The greater the degree of confidence wanted, the wider the confidence interval will be. Statisticians generally use a 95-percent confidence interval. This means that we are 95 percent confident that the true population proportion is in the specified range of the proportion reported based on the sample size.

The table below reports the confidence intervals for the full sample. This table provides the estimates of the standard errors at the 95 percent confidence level. Overall, we are 95 percent confident that the true population proportion ranges between ± 0.3 percent to ± 1.4 percent of the observed proportion. This means, for example, that if 60 percent of the respondents reported that the services helped them achieve some cost savings, there is a 95 percent certainty that the true value in the entire population of MEP clients falls between 58.6 percent and 61.4 percent.

Appendix Table 2.1

STANDARD ERRORS OF ESTIMATES FOR GIVEN SURVEY RESULTS, 95-PERCENT CONFIDENCE LEVEL

Reported Result (Percent)	Sample Size (n,= 4,891 respondents)
1	± 0.3
10	± 0.9
20	± 1.1
30	± 1.3
40	± 1.4
50	± 1.4
60	± 1.4
70	± 1.3
80	± 1.1
90	± 0.9
99	± 0.3

APPENDIX 3: Client Impact Survey – FY 2000 National Results

(n=4,891 respondents)

- Did the services you received lead you to:
 - Take actions that you would otherwise not have taken?
Yes - 69.9%
No - 30.1%
 - Take actions more quickly?
Yes - 75.9%
No - 24.1%
 - Take actions at lower cost?
Yes - 61.7%
No - 38.3%

2. As a direct result of services you received, has your establishment experienced any of the following changes over the past 12 months in these areas of manufacturing systems?
- Reduced lead time
Yes - 68.1%
No - 31.9%
 - Increased throughput
Yes - 79.4%
No - 20.6%
 - Reduced work in process inventory
Yes - 56.6%
No - 43.4%
 - Reduced defect rate
Yes - 68.8%
No - 31.2%
3. As a direct result of services you received, has your establishment experienced any of the following changes over the past 12 months in these areas of marketing and sales?
- Improved understanding of clients, markets, or competitors
Yes - 71.6%
No - 28.4%
 - Improved customer development or retention
Yes - 79.0%
No - 21.0%
 - Entry into new or better markets
Yes - 59.4%
No - 40.6%
4. As a direct result of services you received, has your establishment experienced any of the following changes over the past 12 months in these areas of human resources?
- Improved employee skills
Yes - 85.4%
No - 14.6%
 - Reduced employee turnover
Yes - 42.6%
No - 57.4%
 - Improved work environment for employees
Yes - 81.1%
No - 18.9%
5. As a direct result of services you received, has your establishment experienced any of the following changes over the past 12 months in these areas of information systems?
- Achieved greater integration with your clients or suppliers information systems
Yes - 56.2%
No - 43.8%
 - Improved e-commerce capacity
Yes - 42.9%
No - 57.1%
 - Improved use or selection of information systems or software
Yes - 67.7%
No - 32.3%
6. As a direct result of services you received, has your establishment experienced any of the following changes over the past 12 months in these areas of management systems?
- Improved business or strategic planning
Yes - 76.2%
No - 23.8%
 - Improved understanding of actual costs
Yes - 68.7%
No - 31.3%
 - Improved environmental management systems
Yes - 37.8%
No - 62.2%
7. As a direct result of services you received, has your establishment experienced any of the following changes over the past 12 months in these areas of overall performance?
- Increased inventory turns
Yes - 32.5%
No - 67.5%

- Achieved quality certification (e.g., QS 9000, ISO 9000)
Yes - 19.5%
No - 80.5%
 - Improved profit margin
Yes - 43.8%
No - 56.2%
8. Did the services you received directly lead to any of the following differences in sales at your establishment over the past 12 months?
- Increase in sales
Yes - 25.9% How much? \$698,411,285
No - 74.1%
 - Retention of sales that would otherwise have been lost
Yes - 42.7% How much? \$1,584,758,885
No - 57.3%
9. Did the services you received directly result in cost savings in labor, materials, energy, overhead, or other areas over what would otherwise have been spent in the past 12 months?
- Yes - 60.0% How much? \$246,097,113
- Were cost savings more than 1% of annual sales?
- Yes - 47.4%
No - 52.6%
- No - 40.0%
10. Did the services you received directly result in any of the following changes in employment levels over the past 12 months?
- Retention of jobs that would otherwise have been lost
Yes - 28.9% How many? 16,466
No - 71.1%
 - Creation of additional jobs
Yes - 24.1% How many? 9,058
No - 75.9%
 - Reduction in the number of jobs
Yes - 10.9 How many? 7,520
No - 89.1%
11. Over the past 12 months, were sales per employee higher than they would have been without services?
- Yes - 38.4%
- How much higher?
- 1 less than 1% - 13.1%
2 1% - 3% - 24.2%
3 3% - 5% - 17.5%
4 5% - 10% - 23.4%
5 10% - 20% - 15.6%
6 > 20% - 6.3%
- No - 61.6%
12. Over the past 12 months, were your unit labor costs lower than they would have been without services?
- Yes - 39.3%
- How much lower?
- 1 less than 1% - 19.0%
2 1% - 3% - 25.8%
3 3% - 5% - 17.4%
4 5% - 10% - 20.4%
5 10% - 20% - 12.1%
6 > 20% - 5.4%
- No - 60.7%
13. As a result of the services you received, has your establishment increased its investment over the past 12 months in:
- Plant or equipment?
Yes - 34.2% How much? \$589,195,449
No - 65.8%
 - Information systems or software?
Yes - 31.0% How much? \$93,262,474
No - 69.0%
 - Workforce practices or employee skills?
Yes - 48.6% How much? \$38,772,879
No - 51.4%
 - Other areas of business?
Yes - 11.5% How much? \$151,882,848
No - 88.5%

