

*The Evaluation and Economic Impact of the*  
**Montana Manufacturing  
Extension Center**

**2011 Edition**

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# Contents

- I** Executive Summary
- 2** Montana Manufacturing Extension Center
- 3** The Evaluation Process
- 3** Overall Satisfaction and Client Comments
- 5** Choosing MMEC
- 5** Future Challenges
- 6** Outcomes of MMEC Visits and Services
- 6** Economic Impacts of MMEC Visits and Services
- 7** Return on Investment (ROI)

# Executive Summary

The Montana Manufacturing Extension Center (MMEC) works with manufacturers to create and retain jobs, reduce costs, increase profits, and save time and money. MMEC employees usually make on-site visits to manufacturing clients to assess the problems and suggest solutions.

MMEC closely monitors its performance by welcoming feedback from clients. Each year the clients are surveyed about their satisfaction with the services they received. The respondents are also asked to quantify the economic impacts associated with the MMEC visits. This report summarizes the responses received for MMEC visits during 2010. A directive from the National Institute of Standards and Technology (NIST) established a standard questionnaire and timing for the survey. This is the second year that identical survey procedures were employed to gather the data, and responses can now be exactly compared from one year to the next.

Key findings of the 2010 survey are:

- The clients said they were very satisfied with the services they received and would be very likely to recommend MMEC to other firms.

- The professionalism and knowledge of the MMEC staff was identified as a major strength of the center.
- The most important challenges facing the clients were ongoing continuous improvement/cost reduction strategies and product innovation/development.
- The most important outcomes of the MMEC visits were cost savings and increased investment in work force or employee skills.
- MMEC visits during 2010 resulted in about 355 new and retained manufacturing jobs and approximately \$1,649,200 in Montana Individual Income Tax revenue.
- MMEC visits also lead to significant investments in plant and equipment, information systems or software, and workforce practices or employee skills. Also, there were instances of avoided unnecessary investments.
- The Montana return on investment (ROI) for MMEC during 2010 was 8.2 to 1; the state received about \$8.20 for each dollar invested in MMEC.

# The Evaluation and Economic Impact of the Montana Manufacturing Extension Center

## MONTANA MANUFACTURING EXTENSION CENTER

The Montana Manufacturing Extension Center (MMEC) is the state's representative of the National Institute of Standards and Technology's (NIST) Hollings Manufacturing Extension Partnership. The mission of MMEC is to work with Montana manufacturers to create and retain jobs, increase profits, and save time and money. It provides a variety of services – from innovation strategies to process improvements – and works with manufacturers to develop new customers, create new products, and expand into new markets.

MMEC is located within the College of Engineering at Montana State University-Bozeman. The MMEC director and the administrative offices are located in Bozeman. There are also five field offices across the state: Missoula, Kalispell, Helena, Billings, and Bozeman. Each office is staffed by a field engineer who directly works with the manufacturing clients in the area.

The core strength of MMEC is its employees. They are experienced, committed to Montana, and knowledgeable about all aspects of manufacturing. MMEC field engineers interact directly with manufacturing clients and bring a wealth of expertise, tools, and techniques to help solve the production, technical, and management issues facing companies today. MMEC specialists travel to the manufacturing workplace to observe and evaluate the problems and then collaborate with management and staff to develop workable, cost-effective solutions consistent with company goals.

MMEC hosts a statewide biennial conference for manufacturers and other interested parties which offers an opportunity for learning and networking with peers, suppliers, and colleagues. This conference also showcases many diverse manufactured goods from across Montana.

THE EVALUATION PROCESS

NIST has developed a standardized questionnaire to be completed by clients as part of its management information reporting procedures. Manufacturing clients are asked to complete the questionnaire to evaluate the effectiveness of MMEC and to quantify the economic impact of MMEC’s activities on the Montana economy. NIST also specifies the timing of the evaluations. During 2010, MMEC received 51 questionnaires from clients. Five were judged to be incomplete or otherwise unusable. Therefore, there were 47 usable questionnaires representing completed MMEC projects during 2010.

2010 is the second year that an identical methodology (questionnaire and timing) were used to conduct the survey. Data for 2009 are also presented in the following tables whenever possible. This begins the process of identifying the trends in the evaluation metrics.

OVERALL SATISFACTION AND CLIENT COMMENTS

Manufacturing clients said they relied heavily on MMEC and were very satisfied with the services received. Approximately 62 percent of the respondents said they relied exclusively on MMEC and did not use

any other external providers of business performance services. The 2010 figure is about equal to the 68 percent who responded similarly in 2009 (Table 1).

Respondents were asked to estimate the likelihood they would recommend MMEC to other potential clients (Table 2). The responses ranged from 1 to 10, with 1 being the least likely and 10 being the most likely they would recommend MMEC. About 70 percent of the respondents chose the 10 option (the highest), approximately 17 percent chose the 9 option, and roughly 4 percent chose the 8 option. The Net Promoter Score (NPS) equals the percentage of respondents choosing the 9 or 10 options minus the percentage choosing 1 to 6. MMEC’s 2010 NPS equals 83 (87% - 4%=83). The 2009 NPS value was 78.

The respondents were invited to make their own suggestions and comments directly to MMEC. These responses were grouped by topic and are presented in Table 3 on page 4. There were no criticisms and most were very complementary. In particular, the comments about the professionalism and abilities of the MMEC staff reinforce the findings reported in the next section concerning the primary reason why clients chose MMEC.

Table 1  
Have You Used Any Other Extended Providers for Business Performance Services?

Year	Yes	No	No Response
2009	32%	68%	0%
2010	36%	62%	2%

Table 2  
How Likely Would You Be to Recommend MMEC to Other Clients?

Year	– Not At All Likely –					– Very Likely –				
	1	2	3	4	5	6	7	8	9	10
2009	–	3%	–	–	3%	–	–	10%	18%	66%
2010	–	–	–	–	2%	2%	4%	4%	17%	71%

Table 3  
What Clients Said About MMEC

<p><b>Knowledgeable and Helpful Employees</b></p> <p>Bill was great to work with. For the most part his suggestions pertained directly to us and were easy to implement.</p> <p>Our MMEC consultant, Mark Shyne, was a vital resource in the successful completion of the ISO 9001:2008 certification of our QMS. He helped us to gauge where we were at in the certification process, make a plan to become certified, and then helped us achieve our goal of becoming certified in a very short amount of time. It would have taken a lot longer to become certified if Mark had not been a resource. I would highly recommend his services to any company that is committed to pursuing an ISO certification of any level.</p> <p>Hire more engineers like Dale Dietrich!</p> <p>MMEC engineers are a great bunch to work with. Thanks!</p> <p>MMEC, namely Mark Shyne and Adam Bacon were vital to the success of my business. I have worked with Mark Shyne since starting my business six years ago. We've increased in sales every year from 55%-300% some years. Thanks MMEC!!!!!!!!!!!!!!</p> <p>Continue tradition of excellence.</p> <p>Great people to work with. Could use more of this service.</p>	<p><b>Training and Certification</b></p> <p>They did a great job helping us get our ISO certification.</p> <p>Great coaching and training techniques.</p> <p>We are very pleased with the HACCP training. It provided our company with the necessary training. It was fantastic that the trainers were able to come to us. It allowed us to have more employees/volunteers to attend. Thank you!</p> <p>The MMEC has provided superior business direction and support for our company and we look forward to additional consulting for our future business needs. However, because we are not a publicly traded company, we do not divulge proprietary data concerning sales, payroll, employee numbers, or any other type of business projections. MMEC has been instrumental in bringing our company into compliance with Best Practices and continues to work with us towards achieving ISO 9001 certification.</p>
<p><b>Professionalism and Relevance</b></p> <p>I continue to be impressed with the professionalism of your organization and everyone I had the pleasure of meeting. Thank you for the help you have offered on so very many levels.</p> <p>MMEC is a valuable resource to Montana manufacturers... keep up the great work!</p> <p>Great local resource - we very much appreciated their service!</p> <p>MMEC is structured for the virtual world of the emerging new economy. Build on that.</p>	<p><b>Business Assistance</b></p> <p>My impression is that there is a great need for assistance in the community and that the MMEC staff are stretched pretty thin. Still, the service provided is top notch and always thorough.</p> <p>Well worth the investment in time and resources. The networking with other manufacturers is invaluable.</p> <p>This year we looked at using MMEC services for process optimization modeling. The previous year they helped out substantially with training needs thru available grant funding. Next year we may utilize their services to review efficiencies on some of our other applications.</p> <p>MMEC was helpful. Most of our business problems have been due to construction market collapsing.</p>
<p><b>Assistance for Small Businesses</b></p> <p>Keep up the good work! Small companies like ours really need your expertise. A great group of people with whom to work.</p> <p>MMEC is a great resource for small Montana businesses.</p> <p>I feel that MMEC provides a great resource for small business.</p> <p>MMEC has very knowledgeable support people and good access to other areas of expertise. The was very helpful and instrumental for our small firm to land a major licensing deal with a major defense contractor. In this day and age of government waste, MMEC is truly a government-funded program or organization that works and is very much worth keeping.</p>	



CHOOSING MMEC

The respondents were asked to identify the two most important factors for choosing MMEC (Table 4). The most often mentioned reason, by far, was the expertise of the MMEC staff (81 percent mentioning). The reputation for results and the cost/price of services were tied for the second most often mentioned reason (26 and 28 percent mentioning, respectively). The least mentioned reasons were the lack of other providers or the unavailability of services (9 and 6 percent mentioning, respectively).

The 2010 findings are very similar to those for 2009. The rank order of the top five reasons is the same for both years. The sizable increase in the percent mentioning staff expertise as the reason for choosing MMEC is a further indicator of their professionalism.

FUTURE CHALLENGES

The survey used two methods to gather information about future challenges facing the clients. First, the respondents were presented with nine categorical options and asked to pick the two most important facing their firms. Second, an open-ended question allowed the respondents to identify challenges not on the list.

As shown in Table 5, the most often mentioned future challenges were ongoing continuous improvement /cost reduction strategies (66 percent mentioning) and product innovation/development (51 percent mentioning). The least often mentioned were technology needs (8 percent mentioning) and managing partners and suppliers (15 percent mentioning). The 2010 findings are very similar to those for 2009. The rank order of the top seven challenges is the same for both years and the percentages are almost identical.

The open-ended responses summarized in Table 6 include three other types of challenges. First, the challenges associated with the national business cycle and the collapse of construction. Second, some respondents mentioned product testing. Finally, managing very rapid growth was identified as a serious challenge.

Table 4  
Important Factors for Your Firm  
Choosing MMEC

Factor	Percent Mentioning	
	2009	2010
Staff Expertise	55	81
Cost/Price of Services	32	28
Reputation for Results	29	26
Fair and Unbiased Advice/Services	34	19
Knowledge of Your Industry	16	11
Lack of Other Providers Nearby	7	9
Specific Services Not Otherwise Available	16	6

Table 5  
Important Future Challenges  
Facing Your Business

Challenge	Percent Mentioning	
	2009	2010
Ongoing Continuous Improvement/ Cost Reduction Strategies	61	66
Product Innovation/Development	53	51
Identifying Growth Opportunities	42	47
Employee Recruitment and Retention	29	30
Financing	26	23
Exporting/Global Engagement	17	19
Managing Partners and Suppliers	11	15
Sustainability in Products and Processes	18	13
Technology Needs	16	8

Table 6  
Other Future Challenges Facing Your Business

Challenge
Recovery of the construction industry
Product testing and acceptance in the engineering world
Managing growth (annual 45% growth past 5 years)



## OUTCOMES OF MMEC VISITS AND SERVICES

The survey questionnaire included ten possible outcomes of the MMEC visit, and the respondents were asked whether or not their firm had experienced them (Table 7). The most reported outcome was that MMEC clients said they realized costs savings (70 percent). The second most reported outcome was increased investment in workforce or employee skills (66 percent). There were five other outcomes that were identified by more than 50 percent of the respondents.

Comparing the 2010 and 2009 responses reveals a sizable increase in positive responses for most outcome categories. For example, the respondents reporting increased investment in workforce or employee skills rose 50 percent in 2009 to 66 percent in 2010. The only category to be mentioned less often was increased investment in information systems or software, which dropped from 42 percent in 2009 to 28 percent in 2010.

## ECONOMIC IMPACTS OF MMEC VISITS AND SERVICES

The survey asked each firm how many new jobs were created and how many jobs were retained as a result of the MMEC visit. The respondents reported 175 new jobs and 180 retained jobs for a total gain of 355 jobs during 2010. The average wage for Montana manufacturing jobs was about \$42,700 during 2010. Total wages associated with the new and retained manufacturing jobs were approximately \$15,158,500 ( $355 \times \$42,700 = \$15,158,500$ ). Using an average tax rate of 4.0 percent, the new and retained workers paid approximately \$606,340 ( $\$15,158,500 \times .04 = \$606,340$ ) in Montana Individual Income Taxes.

The Montana Department of Labor and Industry estimates that the employment multiplier for manufacturing is 3.58. This is interpreted as saying that about 2.58 new jobs are created in other sectors as a consequence of one new manufacturing job. The wage multiplier is 2.72, which suggests an additional \$1.72 in

Table 7  
Outcome of MMEC Visit and Services

Outcome	Percent Mentioning	
	2009	2010
Cost savings realized	68%	70%
Increased investment in workforce or employee skills	50	66
Increased investment in plant/equipment	53	57
Retained otherwise lost jobs	50	53
Retained otherwise lost sales	40	51
Created new jobs	34	51
Avoided unnecessary investments	29	51
Increased sales	42	47
Increased investments in other areas	34	45
Increased investments in information systems or software	42	28

Table 8  
Economic Impacts of MMEC Services, 2010

Sector	Jobs	Wages	Montana Individual Income Taxes
Manufacturing	355	\$15,158,500	\$606,340
Other Industries	916	\$26,072,600	\$1,042,860
TOTAL	1,271	\$41,231,100	\$1,649,200

wages is created elsewhere in the Montana economy for each \$1.00 in new manufacturing wages.

As reported in Table 8, the employment and wage multipliers suggest that the 355 new and retained manufacturing jobs associated with MMEC visits during 2010 led to a total of 1,271 ( $355 \times 3.58 = 1271$ ) new jobs in Montana and approximately \$41,231,100 ( $\$15,158,500 \times 2.72 = \$41,231,120$ ) in wages. These additional wages generated about \$1,649,200 ( $.04 \times \$41,231,120 = \$1,649,200$ ) in Montana Individual Income Tax revenue.

There are more economic impacts than employment, wages, and taxes. The MMEC survey asked respondents about new and retained sales, cost savings, capital spending, and workforce investment. Unfortunately, the wording of the questions and timing of the survey has changed over the years, making valid comparisons difficult from one year to another. Table 9 presents data from 2005 to 2010 for four broad categories (the top four rows of the table) of economic impacts and expenditures.

The 2010 was the second year that identical questions and timing were used for the MMEC client survey. The lower four rows of Table 9 present detailed data for five categories of investments related to MMEC visits. These figures are exactly comparable from one year to the next and provide the beginning of a valuable time series.

Analysis of the 2010 responses for economic impacts revealed that several categories were dominated by a few very large responses. This can skew time series analysis. Consequently, there are two 2010 entries for each category. The first includes all responses as reported.

The second excludes the several very large entries. As more data is gathered in future years, the relevance and role of these few responses may become clear.

Every category but one (investment in information systems and software) displayed a significant increase from 2009 to 2010, even when the very large responses were excluded. This reverses the general downward trend experienced from 2008 to 2009. The significant growth between 2009 and 2010 occurred in spite of the particularly long and severe recession.

## RETURN ON INVESTMENT (ROI)

MMEC receives approximately \$200,000 per year in funding from the State of Montana. As reported in Table 8, MMEC projects during 2010 generated about \$1,649,200 in Montana Individual Income Taxes from both direct and indirect jobs. Montana's return on investment during 2010 was approximately 8.2 to 1 ( $\$1,649,200 / \$200,000 = 8.245$ ). Therefore, the public dollars invested in MMEC provide Montanans an excellent rate of return.

**Table 9**  
**Economic Impacts of MMEC Services**

Economic Impact	FY 2005-06	FY 2006-07	2008	2009	2010		Total Five Years (2005-2010)	Since MMEC Inception (1996)
					As Reported	Edited		
New and retained jobs	319	225	142	113	355	221	1,154	1,669
New and retained sales	\$80,970,000	\$83,160,000	\$23,460,000	\$8,870,000	\$170,562,000	\$30,562,000	\$367,022,000	\$413,332,000
Cost savings	\$1,030,000	\$8,490,000	\$2,240,000	\$2,200,000	\$13,462,900	\$3,462,900	\$27,422,900	\$42,332,900
Capital and workforce investments	\$6,200,000	\$4,940,000	\$6,410,000	\$3,500,000	\$29,489,900	\$12,214,900	\$50,539,900	\$74,989,900
Investment in plant/equipment	-	-	-	\$1,849,000	\$7,940,200	\$7,690,200	-	-
Investment in information systems or software	-	-	-	\$297,140	\$226,600	\$226,600	-	-
Investment in workforce practices or employee skills	-	-	-	\$320,600	\$718,700	\$693,700	-	-
Other investments	-	-	-	\$1,028,00	\$20,604,400	\$3,604,440	-	-
Avoided unnecessary investments	-	-	-	\$296,100	\$3,862,300	\$1,862,300	-	-