

NATIONAL SCIENCE FOUNDATION  
INDUSTRY/UNIVERSITY  
COOPERATIVE RESEARCH CENTERS

*FINAL*

*1992-93 PROCESS OUTCOME  
SURVEY RESULTS*

*DESCRIPTIVE STATISTICS  
COMPILED FROM  
FACULTY AND INDUSTRY FORMS:  
LONG AND SHORT VERSIONS*

*AUGUST 1993*

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## OVERVIEW

### The Sample

The final response rate: 36/43 "applicable" centers (84%).

#### **Totals by Individual Respondents**

Faculty Short:	158 cases	Industry Short:	208 cases
Faculty Long:	142 cases	Industry Long:	169 cases
<b>Totals:</b>	<b>300 Fac. Respondents</b>	<b>377 Ind. Respondents</b>	

#### **Totals by Center**

Faculty Short:	18 centers	Industry Short:	19 centers
Faculty Long:	13 centers	Industry Long:	15 centers
<b>Totals:</b>	<b>31 Fac. Questionnaires</b>	<b>34 Ind. Questionnaires</b>	

### Notes

All of the data included in the 1992 data set reflects respondent reports of activity for their center for 1992-93. The data are presented in the same order as they appear in their respective questionnaires (i.e., Faculty Long or Industry Long). Please note that the varying response rates are due to:

- a) Some questions are not included in the short form. Marked questions\* appear only on long questionnaire forms.
- b) Missing Data.

Also, please recall that the "Long" Version questionnaires are required after a center's first and third year of operation. Thus, the subsample responding to the "long form" will tend to be different (younger) than the total sample.

For the first time we are reporting two sets of descriptive statistics for some variables. As in the past, we report individual-level descriptive statistics (e.g., mean score derived from individual respondents) for all variables. In addition, we also report center-level descriptive statistics (e.g., mean score derived from center means) for questions on the "short form" questionnaire. We think these scores are probably more appropriate for making normative comparisons. First, although these are unweighted means (e.g., centers with four respondents were treated the same as centers with 30 respondents), they seem pretty consistent with individual-level statistics. More importantly, normative evaluations of center performance (e.g., how far above or below the mean your center is), should use center-level standard deviations. As in the past, median scores are provided for variables which are affected by extreme outliers.

Five Industry Form questions (19A, 19B, 20A2, 25A, & 25B) warranted the reporting of means in two ways: 1) based on respondents who reported some activity only; and 2) based on all respondents (those reporting no ACTIVITY were treated as if they reported zero).

Final notes: a) All items/questions on the short form are also on the long form; b) the sum of group percentages may exceed 100% due to rounding.

# 1992-93 FACULTY RESULTS - INDIVIDUALS

		<b>N</b>		<b>%</b>					
1. In general, how much experience do you have working with industry?*									
A great deal		69		46					
A moderate amount		44		29					
A little		30		20					
None at all		7		5					
2a. Academic Rank *									
Assistant		29		20					
Associate		34		23					
Full		73		50					
Other		10		7					
2b. Is Respondent Tenured?*									
Tenured		107		72					
Not Tenured		42		28					
Respondent in Tenure-Track Position?									
No		16		39					
Yes		25		61					
3. Percent Allocation of FTE:*									
		<b>MEAN</b>		<b>SD</b>					
Center-Funded Research		21%		21.3					
Non-Center Research		29%		19.3					
Teaching		32%		17.9					
Administration		13%		17.4					
Other		13%		19.8					
4. Extent of University Influence on Decisions Affecting the Center:*									
		<i>No Influence</i>		<i>Some Influence</i>		<i>A lot of Influence</i>		<i>Almost Complete Control</i>	
		<b>1</b>		<b>2</b>		<b>3</b>		<b>4</b>	
	<b>MEAN</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>
Planning and Strategy	1.6	57	50	52	46	4	3.5	1	.9
Project Selection	1.1	98	89	10	9	2	2	0	0
Conduct of Research	1.1	100	90	8	7	3	3	0	0
Evaluation of Research	1.2	92	83	14	13	4	4	0	0
Budget and Logistics	1.8	43	38	48	43	19	17	2	2
App'tments of Fac.& Staff	2.4	28	26	24	22	36	33	20	19

4b. Extent of Center Director Influence on Decisions Affecting the Center:\*

	<u>MEAN</u>	<i>No Influence</i>		<i>Some Influence</i>		<i>A lot of Influence</i>		<i>Almost Complete Control</i>	
		1		2		3		4	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Planning and Strategy	2.9	6	5	19	15	81	64	20	16
Project Selection	2.7	10	8	33	26	70	57	10	8
Conduct of Research	2.1	29	25	56	47	28	24	5	4
Evaluation of Research	2.4	13	11	49	41	53	44	5	4.2
Budget and Logistics	2.9	6	5	22	18	69	56	26	21
Appointments of Faculty and Staff	2.4	27	24	31	28	40	36	14	13

4c. Extent of Faculty Influence on Decisions Affecting the Center:\*

	<u>MEAN</u>	<i>No Influence</i>		<i>Some Influence</i>		<i>A lot of Influence</i>		<i>Almost Complete Control</i>	
		1		2		3		4	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Plan.. and Strategy	2.2	17	14	62	51	39	32	4	3
Project Selection	2.1	37	31	43	36	31	26	8	7
Conduct of Research	3.2	7	6	11	9	54	43	53	42
Eval. of Research	2.2	28	23	45	38	38	32	9	7
Budget and Logistics	2.1	33	28	48	41	28	24	9	7
Appointments of Faculty and Staff	2.0	39	35	39	35	26	23	9	8

## 4d. Extent of Industry Advisory Board Influence on Decisions Affecting the Center:\*

	MEAN	<i>No Influence</i>		<i>Some Influence</i>		<i>A lot of Influence</i>		<i>Almost Complete Control</i>	
		N	%	N	%	N	%	N	%
Plan. and Strategy	2.8	4	3.2	30	24	82	66	9	7
Project Selection	3.2	4	3	15	12	59	47	48	38
Conduct of Research	2.1	20	17	68	57	28	23	4	3
Eval. of Research	3.1	3	2.4	19	15	69	55	35	28
Budget and Logistics	2.5	14	12	47	40	46	39	12	10
Appoint. of Faculty and Staff	1.5	76	70	22	20	6	6	5	5

## 4e. Extent of Student Influence on Decisions Affecting the Center:\*

	MEAN	<i>No Influence</i>		<i>Some Influence</i>		<i>A lot of Influence</i>		<i>Almost Complete Control</i>	
		N	%	N	%	N	%	N	%
Planning and Strategy	1.2	91	80	20	17	3	3	0	0
Project Selection	1.2	96	85	14	12	2	2	1	1
Conduct of Research	2.1	38	32	38	32	35	30	7	6
Eval. of Research	1.3	82	73	24	21	7	6	0	0
Budget and Logistics	1.1	106	96	3	3	1	1	1	1
Appoint. of Faculty and Staff	1.1	101	94	4	4	1	1	1	1

4f. Extent of Established University Procedures Influence on Decisions Affecting the Center:\*

	MEAN	No Influence		Some Influence		A lot of Influence		Almost Complete Control	
		1		2		3		4	
		N	%	N	%	N	%	N	%
Planning and Strategy	1.6	45	44	55	53	3	3	0	0
Project Selection	1.1	92	89	11	10	1	1	0	0
Conduct of Research	1.4	71	68	30	29	4	4	1	1
Evaluation of Research	1.2	93	89	11	10	1	1	1	1
Budget and Logistics	1.7	51	48	43	41	10	9	2	2
Appoint. of Faculty and Staff	1.8	44	43	37	36	17	17	4	4

5. During the past year how satisfied were you with the following features of the Center?

	MEAN	Completely Satisfied		A Great Deal Satisfied		Somewhat Satisfied		Not At All Satisfied	
		1		2		3		4	
		N	%	N	%	N	%	N	%
Technical quality of the research	3.1	78	27	155	54	48	17	6	2
Commun. between Staff and Industry	2.8	47	18	125	47	81	30	15	6
Center Administ. practices	2.8	58	20	132	47	73	26	21	7
Responsiveness to Industry needs	3.0	64	23	141	51	63	23	7	3
Innovative quality of research	3.0	77	27	126	44	72	25	9	3
Project selection process	2.8	66	23	117	41	76	27	24	8.5

6. How important to you are the following goals and outcomes of the Center?\*

	MEAN	<i>Extremely Important</i>		<i>Considerably Important</i>		<i>Somewhat Important</i>		<i>Not at all Important</i>	
		4		3		2		1	
		N	%	N	%	N	%	N	%
General expansion of knowledge in this technical area	3.7	108	75	29	20	8	6	0	0
Enhancement of graduate students' technical training	3.3	71	49	50	35	23	16	1	1
Enhancement of graduate students' understanding of industry	2.8	35	24	59	40	44	30	9	6
Redirection of university research toward industrial problems	2.7	24	16	61	42	49	33	13	9
Enhancement of quality of industrial research	2.8	41	28	50	34	41	28	14	10
Development of new research projects	2.5	23	16	50	34	52	35	22	15
Development of patentable products	2.0	11	8	25	17	57	39	54	37
Development of commercialized products	2.1	15	10	34	23	57	39	41	28

7. Compared to the research you typically conduct outside the Center, would you describe your Center-funded research as:\*

	MEAN	<i>More Basic</i>		<i>No Effect</i>				<i>More Applied</i>			
		1		2		3		4		5	
		N	%	N	%	N	%	N	%	N	%
Basic or Applied	3.5	3	2	09	6	61	42	57	39	15	10
		<i>Broader</i>						<i>Narrower</i>			
Broader or Narrower in Scope	3.0	10	7	24	17	73	50	29	20	9	6
		<i>Longer</i>						<i>Shorter</i>			
Time Frame	3.3	10	7	24	17	65	45	34	24	12	8

8. What effect has participation in the Center had for you in the following areas:

	MEAN	Negative Effect				No Effect				Positive Effect	
		N	1	2	3	4	5	N	%		
Opportunities for Consulting	3.4	3	1	5	2	183	63	76	26	23	9
Opportunities for Research Contracts	3.8	3	1	6	2	101	34	121	40	65	22
Access to Equip	3.7	0	0	6	2	129	44	98	33	62	21
Trust and Conf. in Industry	3.6	2	1	11	4	129	44	102	36	49	16
Evaluation of the Quality of Industrial Research	3.4	5	2	15	5	155	53	90	31	29	10
Chances for Promotion/ Tenure & Salary Increases	3.4	12	4	18	6	133	48	99	34	25	9
Amount of Inter-action with Other Faculty	4.0	2	1	6	2	46	16	172	58	70	24
Ability to Support Student Theses/ Dissertation Research	4.2	2	1	4	1	57	20	106	36	127	43
Amt. of Autonomy in Conducting Research	3.5	12	4	28	10	110	37	88	30	58	20
Ability to Publish in a Timely Fashion	3.5	4	1	31	11	142	47	69	23	50	17

9. What effect has participation in the Center had for the university in the following areas?\*

	MEAN	Negative Effect				No Effect				Positive Effect	
		1		2		3		4		5	
		N	%	N	%	N	%	N	%	N	%
Knowledge Base	4.2	1	1	0	0	18	13	76	55	43	31
Student Recruit.	3.8	2	1	1	1	52	38	47	34	36	26
Faculty Recruit.	3.6	2	1	1	1	69	52	41	31	20	15
Qual. of Research Projects in the University	3.8	1	1	2	1	44	32	64	46	27	20
Res. Funds from Private Sources	4.1	1	1	1	1	29	21	63	46	42	31
Res. Funds from Public Sources	3.8	0	0	2	1	52	38	56	41	26	19
University Patent	3.5	0	0	1	1	74	57	44	34	10	8

10. Compared to other forms of research funding you have received in the past, how would you rate this Center on the following dimensions?\*

	MEAN	Compares Favorably		About the Same		Compares Unfavorably	
		1		2		3	
		N	%	N	%	N	%
Amount of work invested to obtain funding	1.6	77	54	50	35	15	11
Administrative time/effort invested in project	1.7	57	40	67	48	17	12
Likelihood funding will be avail. to support my long range goals	1.9	43	30	71	50	28	20
Amount of funding provided to conduct research	2.0	37	27	63	45	39	28
Budgetary flexibility	1.6	64	46	65	46	11	8

11a. During the past year, how many publications in the open literature have you had based on center research?

<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
290	2.1	1	2.9

b. How many of these were with company scientists?

257	0.3	0	1.1
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c. With students?

272	1.9	1	2.6
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12a. During the past year, how many presentations have you made at conferences or professional meetings based on center research?

<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
291	2.6	2	3.5

b. How many were with company scientists?

263	0.33	0	1.0
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c. With students?

274	1.9	1	3.0
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13a. During the past year, how many students theses/dissertations based on Center research were completed under your supervision?

<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
282	0.8	0	1.6

b. How many of these are currently in progress?

284	1.7	1	2.2
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14a. Excluding Center board/monitor meetings, how many times during the past year did you personally have contact with individuals from other companies?

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
1. By phone?	287	13	5	20.6
2. In person?	284	6.5	3	13

b. During the last year, how many days have you spent visiting or working at member company laboratories?

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
Number of Days	278	4.4	0	13.8

15. How long, on average, do you feel that it should take for a new Center research project to yield tangible results?

	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>Std. Dev.</u>
Number of months	276	22	24	13.2

16. To what extent are you generally satisfied with the operation and activities of the Center?

	<i>Completely Satisfied</i>		<i>Considerably Satisfied</i>		<i>Somewhat Satisfied</i>		<i>Not at all Satisfied</i>	
	4		3		2		1	
<u>MEAN</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
3.0	68	24	151	53	48	17	17	6

AGGRAGATED FACULTY RESULTS FOLLOW

**1992-93 FACULTY RESULTS - CENTERS**

Numbering refers to faculty long form questionnaire. Only faculty short questions included.

**Question Number**

5. How satisfied were you with the following features of the Center?

*Completely Satisfied = 1; Not At All Satisfied = 4*

	<b>MEAN</b>	<b>SD</b>	<b>N</b>
Technical quality of the research	3.0	.5	31
Commun. between Staff and Industry	2.8	.6	31
Center Administ. practices	2.8	.4	31
Responsiveness to Industry needs	3.0	.5	31
Innovative quality of research	3.0	.4	31
Project selection process	2.9	.4	31

8. What effect has participation in the Center had for you in the following areas:

*Negative Effect = 1; Positive Effect = 5*

	<b>MEAN</b>	<b>SD</b>	<b>N</b>
Opportunities for Consulting	3.4	3.6	31
Opportunities for Research Contracts	3.8	.4	31
Access to Equip	3.8	.5	31
Trust and Conf. in Industry	3.7	.4	31
Evaluation of the Quality of Industrial Research	3.5	.4	31
Chances for Promotion/ Tenure & Salary Increases	3.4	.4	31

8. Effect participation in the Center had for you :  
 Negative Effect = 1; Positive Effect = 5

	<u>MEAN</u>	<u>SD</u>	<u>N</u>
Amount of Inter- action with Other Faculty	4.0	.2	31
Ability to Support Student Theses/ Dissertation Research	4.2	.4	31
Amt. of Autonomy in Conducting Research	3.6	.5	31
Ability to Publish in a Timely Fashion	3.4	.4	31

11a. During the past year, how many publications in the open literature have you had based on center research? \*\*

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
	31	2.3	2.1	1.5
b. How many of these were with company scientists?	30	0.4	.1	.6
c. With students?	31	2.0	2.0	1.7

12a. During the past year, how many presentations have you made at conferences or professional meetings based on center research? \*\*

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
	31	2.6	2.4	1.7
b. How many were with company scientists?	29	0.4	0.2	.6
c. With students?	31	2.0	2.0	1.5

\*\* These values are calculated as the average per faculty respondent per center.

13a. During the past year, how many students theses/dissertations based on Center research were completed under your supervision? \*\*

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
	30	0.8	.8	.7

b. How many of these are currently in progress?

	28	1.9	1.7	1.0
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14a. Excluding Center board/monitor meetings, how many times during the past year did you personally have contact with individuals from other companies? \*\*

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
1. By phone?	30	12.5	12.0	7.1
2. In person?	30	6.3	4.8	4.4

b. During the last year, how many days have you spent visiting or working at member company laboratories?

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
Number of Days	30	4.4	2.4	5.2

15. How long, on average, do you feel that it should take for a new Center research project to yield tangible results? \*\*

	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>Std. Dev.</u>
Number of months	30	20.6	19.8	4.9

16. To what extent are you generally satisfied with Center operations and activities  
*Completely Satisfied = 4; Not at all Satisfied = 1*

<u>MEAN</u>	<u>SD</u>	<u>N</u>
2.9	.48	30

**INDUSTRY RESULTS FOLLOW**

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\*\* These values are calculated as the average per faculty respondent per center.

**1992-93 INDUSTRY RESULTS**

	<u>N</u>	<u>MEAN</u>	<u>MED.</u>	<u>SD</u>
1. How many years have you spent with the company?*	169	16.5	15	11.1
2. How many years have you spent in R&D with the company?*	169	11.8	8	10.5
3. How many years have you spent in industry in general?*	168	21.8	22	10.5
4. How many years have you spent in R&D with industry?*	168	15.5	15	10.7

5a. What is the highest degree you have received?*	<u>N</u>	<u>%</u>
High School	1	1
AA/AS	1	1
BA/BS	40	24
MA/MS	50	29
Ph.D.	76	45

b. In what field?\*

Engineering	104	61
Physical Science	42	25
Social Science	0	0
Liberal Arts	2	1
Management	5	6
Other	12	7

6. Coursework from university where Center is located?\*

Yes	26	15
No	144	85

	<u>N</u>	<u>MEAN</u>	<u>SD</u>
7. How many years have you been a board member?*	156	2.7	1.8

8. Were you a board member when your company joined the Center?\*

Yes	72	44
No	91	56

9. To what extent do you have scientific/technical expertise in the research areas being investigated within the Center?\*

Degree of technical expertise:

	<u>FREQ</u>	<u>%</u>
In (almost) no areas	7	4
In a few areas	26	15
About half	41	24
In most areas	84	50
In all areas	11	6

10. How involved were you in the establishment of the Center?\*

Not at all	96	58
A little	29	17
A modest amount	24	14
A great deal	18	11

11. How frequently do you disseminate Center technical reports and updates to the following groups?

	<u>MEAN</u>	<i>Never</i>		<i>1-2/year</i>		<i>3-4 year</i>		<i>5+/year</i>	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Technical staff in your group	2.9	13	4	118	33	108	30	116	33
Technical staff in your division	2.6	29	9	144	42	93	27	76	22
Technical staff in other divisions	2.2	81	24	149	45	66	20	39	12
Your immediate supervisor	2.5	43	13	162	47	71	21	68	20
Top corporate management	1.6	172	53	115	36	22	7	14	4

13. During the past year, how would you rate the overall research program in the Center compared to similar research programs in other U.S. universities?

	<u>MEAN</u>	<u>N</u>	<u>%</u>
Top 2% (4)	2.6	45	14
Top 10% (3)		127	40
Above average (2)		134	42
Below average (1)		13	4
Not comparable (9)		40	N/A

14. During the past year how satisfied were you with the following features of the Center?

	<u>MEAN</u>	A							
		<i>Completely Satisfied</i>		<i>Great Deal Satisfied</i>		<i>Somewhat Satisfied</i>		<i>Not at All Satisfied</i>	
		4	3	2	1	N	%	N	%
Technical quality of the research	3.0	86	23	205	55	76	21	3	1
Communication between Center staff and your company	3.0	113	30	152	41	97	26	10	3
Center administrative practices	3.0	111	31	145	40	92	26	12	3
Responsiveness of the Center to industry needs	2.9	98	26	155	42	106	29	12	3
Innovative quality of research	2.9	75	20	182	49	103	28	9	2
Proj. selection process	2.9	73	20	188	51	90	25	15	4

17. How important to you are the following goals and outcomes of the Center?\*

	<u>MEAN</u>	<i>Extremely Important</i> 4		<i>Considerably Important</i> 3		<i>Somewhat Important</i> 2		<i>Not at all Important</i> 1	
		N	%	N	%	N	%	N	%
Gen. expansion of knowledge in this tech. area	3.5	97	58	62	37	8	5	1	1
Enhancement of grad. student tech. training	2.9	44	26	67	39	51	30	8	5
Enhancement of grad. students' understanding of industry	2.9	46	27	71	42	46	27	6	4
Redirection of university res. towards indust. problems	3.2	60	36	78	46	26	16	4	2
Enhancement of quality of indust. research	3.0	53	31	65	39	42	25	9	5
Development of new company res. projects	2.3	21	12	47	28	72	42	30	18
Development of patentable products	1.8	8	5	21	12	74	44	66	39
Development of commercialized products	2.1	16	10	41	24	57	34	55	33

18. How long, on average, do you feel that it should take for a new Center research project to yield tangible results?

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
Number of months	364	23.2	24	17.2

19a. During the past year, approximately how many new research projects have been stimulated in your Division's research laboratories by Center activities?

**NUMBER OF PROJECTS**

	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>SD</u>
<i>entire sample</i>	322	1.0	0	2.6
<i>those responding at least 1</i>	152	2.2	2.0	3.4

b. RESEARCH DOLLARS (in thousands)

<i>entire sample</i>	300	110	0	455
<i>those responding at least 1</i>	130	255	50	666
<i>research dollars per project</i>	130	159	50	568

20a. During the past year, has participation in the Center activities stimulated additional research contracts with faculty?

	<u>N</u>	<u>%</u>
Yes	96	28
No	242	72

If yes, approximately how many research dollars (in thousands)?

	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>SD</u>
<i>those responding "yes" to 20a</i>	86	120	40	537
<i>entire sample</i>	337	36.7	0	296

b. During the past year, has participation in the Center activities stimulated research contracts with other laboratories or researchers?

	<u>N</u>	<u>%</u>
Yes	55	18
No	248	82

If yes, approximately how many research dollars (in thousands)?

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
<i>those responding "yes" to 20b</i>	42	144.4	50	391
<i>entire sample</i>	300	22.2	0	156.8

21. During the past year, to what extent has the research conducted at the Center caused changes in the R&D projects in your company?

	<u>MEAN</u>	<i>A Lot</i> <b>4</b>		<i>Some</i> <b>3</b>		<i>A Little</i> <b>2</b>		<i>Hardly Any</i> <b>1</b>	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Research topics and issues	1.9	14	4	95	26	103	28	151	42
Research methods and procedures used	1.7	11	3	71	20	80	22	198	55
Criteria methods used to evaluate the research projects	1.5	7	2	47	13	65	18	236	67

23. What percentage of the Center research projects do you take interest in and monitor closely?

<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
359	41.4	33	28.7

24. During the past year, has your participation in the Center produced any of the following benefits to your company?

	<u>MEAN</u>	<i>Significant Effect</i> <b>3</b>		<i>Moderate Effect</i> <b>2</b>		<i>No Effect</i> <b>1</b>	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Improvements in products and services	1.5	16	5	98	33	182	61
New products developed due to related efforts	1.3	20	7	52	19	208	74
Reduction of production costs	1.2	9	3	46	17	220	80
Improvements in processes and methods of production	1.4	21	8	78	28	180	64

(item 24 cont ->)

	MEAN	Significant Effect 3		Moderate Effect 2		No Effect 1	
		N	%	N	%	N	%
Better personnel recruit.	1.4	21	7	71	24	200	69
Improved abil. to cooperate with outside scientists	1.9	55	16	188	55	97	29
Increased interaction with other companies	2.1	85	25	205	59	55	16
Increased interaction with University faculty	2.2	111	31	198	56	44	13

25a. During the past year, how many students trained in the center research projects have been interviewed for possible employment in your company?

	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>SD</u>
entire sample	329	.6	0.0	2.2
those responding at least 1	88	2.2	1.0	3.7

b. How many have actually been hired?

	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>SD</u>
entire sample	311	.3	0.0	1.7
those responding at least 1	46	1.9	1.0	4.1

26. During the past year, how many days have CENTER SCIENTISTS/ENGINEERS spent on-site visiting or working in your labs?

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
	350	4.2	0	13

27. During the past year, how many days have YOUR SCIENTISTS/ENGINEERS spent on-site visiting or working in your Center labs?

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
	344	5.6	2	17.6

28. Excluding Center board/monitor meetings, how many times during the past year did you personally have contact with faculty affiliated with the Center?

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
a. By phone	370	7.9	5	11
b. In person	351	3.5	2	6.1

29. What effect has your participation in the Center had on the following:

	<u>MEAN</u>	<i>Negative Effect</i>		<i>No Effect</i>				<i>Positive Effect</i>			
		<u>1</u>		<u>2</u>		<u>3</u>		<u>4</u>		<u>5</u>	
		<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Trust and confid. in the University	4.2	2	1	12	3	58	16	148	39	149	40
My evaluation of the quality of university research	4.0	1	0	13	4	61	16	193	52	104	28
Chances for career advancement, promotion and salary increases	3.2	3	1	6	2	300	82	40	11	18	5

30. To what extent are you generally satisfied with the operation and activities of the Center?

<u>MEAN</u>	<i>Completely Satisfied</i>		<i>Considerably Satisfied</i>		<i>Somewhat Satisfied</i>		<i>Not at all Satisfied</i>	
	<u>4</u>		<u>3</u>		<u>2</u>		<u>1</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
2.9	79	21	191	51	96	26	8	2

31. What's the likelihood your firm will renew its membership?

	<u>N</u>	<u>%</u>	<u>MEAN</u>
Almost certain	128	35	3.0
Very likely	132	36	
Uncertain	82	22	
Unlikely	28	8	

**AGGREGATED INDUSTRY RESULTS FOLLOW**

## 1992-93 AGGREGATED INDUSTRY RESULTS

Numbering refers to industry long form questionnaire.

**QUESTION NUMBER.**

11. How frequently do you disseminate Center technical reports to the following:

Never=1; 5+/year= 4

	<u>N</u>	<u>MEAN</u>	<u>SD</u>
Technical staff in your group	34	2.8	.5
Technical staff in your division	34	2.6	.4
Technical staff in other divisions	34	2.1	.4
Your immediate supervisor	34	2.5	.4
Top corporate management	34	1.6	.3

13. Overall research program in the Center compared to similar research programs:  
Top 2%= 4; Below average=1

<u>N</u>	<u>MEAN</u>	<u>SD</u>
34	2.6	.5

14. How satisfied were you with the following features of the Center?

Completely Satisfied = 4; Not at All Satisfied = 1

	<u>N</u>	<u>MEAN</u>	<u>SD</u>
Technical quality of research	34	3.0	.4
Communication: Center staff & company	34	3.0	.4
Center adm practices	34	3.0	.5
Responsiveness ind. needs	34	2.9	.5
Innovative quality of research	34	2.9	.4
Proj. selection process	34	2.9	.3

18. How long, on average, should a research project take to yield results:\*\*

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
Number of months	34	23.3	24	6.7

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\*\* These values are calculated as the average per firm per center.

**Aggregated Industry Count. FINAL 1992-93 Process Outcome 23**

19a. Approximately how many new research projects have been stimulated in your Division's research laboratories by Center activities:\*\*

**NUMBER OF PROJECTS**

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
entire sample	34	1.0	1.0	.64
<b>b. RESEARCH DOLLARS (in thousands)</b>				
entire sample	32	147.8	66.7	183.4
centers funding 1 or more projects	31	141.7	73.9	161.2

20a. Approximately how many research dollars (in thousands) are additional research contracts with faculty worth? \*\*

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
entire sample	33	74.4	33.3	142.2

b. During the past year, has participation in the Center activities stimulated research contracts with other laboratories or researchers: \*\*

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
entire sample	30	92.7	43.8	167.3

21. To what extent has the research conducted at the Center caused changes in the R&D projects in your company? A Lot= 4; A Little= 1

	<u>N</u>	<u>MEAN</u>	<u>SD</u>
Research topics & issues	34	1.9	.3
Research methods & procedures	34	1.7	.5
Criteria used to evaluate research projects	34	1.6	.5

23. What percentage of Center research projects do you take interest in & monitor:

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
	34	43.3	43.9	12.1

24. Has your participation produced any of the following benefits to your company: Significant Effect= 3; No Effect = 1

	<u>MEAN</u>	<u>N</u>	<u>SD</u>
In products & services	1.4	34	.3
New products developed due to related efforts	1.4	34	.2
Reduction of production costs	1.2	34	.2
Improvements in process & production methods	1.5	34	.3
Better personnel recruit.	1.4	34	.3
Improved ability to cooperate with outside scientists	1.9	34	.2
Increased interaction with other companies	2.1	34	.3
Increased interaction w/lt University faculty	2.2	34	.2

\*\* These values are calculated as the average per firm per center.

**Aggregated Industry Count. FINAL 1992-93 Process Outcome 24**

25a. During the past year, how many students trained in the center research projects have been interviewed for possible employment in your company? \*\*

	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>SD</u>
entire sample	34	.9	.4	1.1

b. How many have actually been hired?

entire sample	34	.4	.1	.8
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26. How many days have CENTER SCIENTISTS/ENGINEERS spent on-site visiting labs: \*\*

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
	34	5.1	2.4	7.5

27. How many days have YOUR SCIENTISTS/ENGINEERS spent on-site visiting labs: \*\*

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
	34	5.8	3.8	6.0

28. How many times during the past year did you personally have contact with faculty affiliated with the Center? \*\*

	<u>N</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>SD</u>
a. By phone	34	8.7	7.0	6.2
b. In person	34	3.8	3.0	2.7

29. What effect has your participation in the Center had on the following:  
Negative Effect = 1, Positive Effect = 5

	<u>N</u>	<u>MEAN</u>	<u>SD</u>
Trust and confid. in the University	34	4.2	.5
Evaluation of university research	34	4.1	.4
Chances for advancement, promotion, etc	34	3.1	.2

30. To what extent are you generally satisfied with the operation and activities of the Center?

Completely Satisfied = 4; Not at all Satisfied = 1

	<u>N</u>	<u>MEAN</u>	<u>SD</u>
	34	2.9	.4

31. What's the likelihood your firm will renew its membership?

Almost certain = 4; Unlikely = 1

	<u>N</u>	<u>MEAN</u>	<u>SD</u>
	34	2.9	.5

\*\* These values are calculated as the average per firm per center.