

The Evolution of the Management Sciences: A Report on the 1988 Survey of TIMS Membership

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The last two decades have witnessed an evolution in the field of management science as evidenced by the changing profile and habits of TIMS members. This paper reports the results of a survey administered to over 2,400 TIMS members in an attempt to assess the current status of the field and the organization. Specifically, it evaluates the changes in the characteristics of members, their professional roles, their evaluation of TIMS services, and their journal preferences. The results indicate that while TIMS has adapted quite well to the changing demographics of its membership, there are a number of specific concerns that need to be addressed.

In 1988, we surveyed members of The Institute of Management Sciences (TIMS). Our overall objective was to continue to describe the evolution of the management sciences and management scientists by drawing on responses from the members of the largest international organization of professionals in the field. This evolution has previously been described by Schaffir [1968], Gupta and

Simon [1974], and Hall [1984].

More specifically, our objectives in this survey were

- (1) to describe members and their professional roles,
- (2) to evaluate the services provided and activities sponsored by TIMS, and
- (3) to evaluate some specific changes that might be made in certain TIMS activities; most notably in the national

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meetings.

Generally, past TIMS membership surveys have had multiple objectives as well. One objective has usually been to develop statistics describing the TIMS member population. Other objectives have varied and have generally reflected the salient issues of the period. For instance, the Schaffir [1968] survey emphasized meetings and publications, then as now considered to be the two major activities of a professional society. Gupta and Simon [1974] focused primarily on publications and the reading habits of members, reflecting the then-current controversy surrounding such issues as "theory versus applications." The Hall [1984] survey emphasized career paths and compensation, reflecting then-current concerns with the role of management science and of management scientists in organizations.

Our secondary objective was to evaluate TIMS' broad range of services and activities. This reflected the desire of the then-vice-president of member activities (King) to develop empirical data on which to base recommendations to TIMS Council concerning budgetary reallocations or programmatic changes. As well, this objective probably reflects a maturation of the field and of TIMS in that the organization and its members are no longer greatly concerned with such controversies as "theory versus applications" in the journals or "technical versus managerial" career paths.

One area of modest emphasis in the survey was TIMS meetings. Two successive vice-presidents of meetings (Abrams and Fenske) asked for more detailed information about members' preferences for

various national meeting formats.

The Instrument

We developed the survey instrument carefully. In particular, we assessed and used some items from previous member surveys [Schaffir 1968; Gupta and Simon 1974; and Hall 1984] so that we could compare member descriptions across surveys. We also assessed other relevant surveys [Abendroth 1983; King 1983; King, Kilmann and Sochats 1978; and Thornhill and Abendroth 1981] to identify useful items. We collected survey items reflecting similar attributes from the various surveys and compared their formats. Sometimes, the categories used in previous surveys were either too broad or inappropriate for the current survey. In these cases, we used a different categorization scheme. For example, the Schaffir [1968] survey places members employed by industrial firms and by consulting firms in one category, while this survey distinguishes between the two.

Concerning meeting preferences, we asked the vice-president of meetings (Abrams), for a wish list based on suggestions from the TIMS-ORSA Combined Meetings Committee (CMC). Much of this list concerned obtaining members' preferences for alternative meeting configurations. The CMC had discussed various alternatives but they had little empirical data.

We pilot-tested the alternatives for each item with TIMS members and discussed them with selected TIMS officials to assess their validity and the managerial-relevance of the data to be collected.

We then developed and pilot-tested a preliminary survey instrument to meet

the predetermined instrument size, which was based both on the economics of mailing and assessments of the likely impact of instrument size on the response rate.

We asked selected TIMS officials to ensure that the data to be provided would be meaningful and useful to them.

Administration

The four-page survey was sent to all 5,967 TIMS members who had paid their dues as of the mailing date (April 6, 1988). This number does not reflect total TIMS membership because of the way renewals are processed by the TIMS business office. Accompanying the data-gathering instrument was a brief letter from the vice-president of member activities stating the objectives, asking for participation, and assuring anonymity. The format was a four-page postpaid self-mailer.

The response rate was about 40 percent; 90.5 percent of these classified themselves as "regular members," 7.9 percent as "student members," and 1.5 percent as "retired members." This response rate was higher than that of prior surveys. We attribute this to both the higher level of interest of TIMS members in the organization and the professional

and user-friendly format of the questionnaire. In all, we analyzed 2,441 questionnaires.

Results

In presenting the results of the survey and comparing it to previous surveys, we use the exact categories and terminologies used in each survey and identify them according to the year in which each was made. Thus, Schaffir [1968] reports on the 1967 survey, Gupta and Simon [1974] report on the 1973 survey, Hall [1984] reports on the 1982 survey, and we present data from the 1988 survey.

Age, Education, and Work Experience

TIMS members are considerably older than they were in 1967 and 1973; almost one in five is over 50 (Table 1). Also, the proportion of members over the age of 40 has more than doubled, from 26 percent in 1973 to 52.3 percent in 1988. Correspondingly, the less-than-31 age group has decreased from 21 percent in 1967 and over 25 percent in 1973 to just 10.7 percent in 1988.

The educational level of members has also increased, with almost 70 percent of the respondents holding doctorates (Table 2). This represents a 75 percent increase over the 1973 figure. With over half the

1967 Survey		1973 Survey		1988 Survey	
Age Group	%	Age Group	%	Age Group	%
to 25	2	up to 30	25.3	25 or less	1.7
25-30	19			26-30	9.0
30-40	41	between 30 & 40	48.0	31-40	36.9
40-50	26	older than 40	26.7	41-50	33.8
50-up	12			51-60	12.9
				60 and older	5.6

Table 1: Age distribution of TIMS members responding in 1967, 1973, and 1988 TIMS surveys. The categories reported in all tables are those that were actually used in each survey.

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Degree	1973 Survey %	1988 Survey %
Doctorate	42.7	69.7
Masters	44.6	26.5
Bachelors		3.4
Associate or Other		
Professional		0.1
None		0.2

Table 2: The educational levels of TIMS members in the 1973 and 1988 survey.

Experience	%
Less than 5 years	18.4
5-10	20.3
11-20	33.1
More than 20	28.2

Table 3: The professional experience of TIMS members (1988 survey).

members over the age of 40, we would expect this to be a highly experienced group. This is indeed true; more than 60 percent of the members have over 10 years of professional experience (Table 3). In sum, this survey reflects a strong trend towards an older, more experienced and highly educated TIMS membership.

Primary Job

Over 60 percent of respondents classified themselves as academics, while about 31 percent are in business (1/3 of whom are in consulting), and 8 percent are in government jobs (Table 4).

As a validity check, we compared these percentages with those obtained from the

current *TIMS Membership Directory*. While 22 percent of TIMS members have not provided their affiliations, of those who did, 62 percent are in universities, 33 percent in private companies and 5 percent are in government. Though these descriptions are different from those used in this survey, the two distributions appear to correspond well. Members employed in education now represent a substantial majority, which explains to some extent the high number of doctorates. A matter of concern is the dwindling proportion of practitioners and consultants. For instance, since 1982, the proportion from "profitmaking organizations" has almost halved; a considerable decline for a six-year period.

This distribution generally holds true for the various age groups of the respondents (Table 5). However, those less than 25 years old and those greater than 60 differ: they have fewer respondents in education and more in consulting than other age groups.

To gain further insight into the nature of members' primary jobs, we used the classification shown in Table 6. The proportion who considered their primary work to be education/teaching expectedly remained about the same as in Table 4. The proportion of members holding strictly technical jobs has declined from

Employer	1967 Survey %	1973 Survey %	1982 Survey %	1988 Survey %
Industrial	53	53	52	20.7
Education	27	47	39	60.7
Government	7		8	8.2
Consulting	13			10.3

Table 4: The employment affiliation of TIMS members: A comparison of four surveys.

Age in Years	Education %	Industry %	Consultant %
<25	50	33	16
26-30	57	35	8
31-40	61	32	7
41-50	59	34	7
51-60	59	29	12
>60	47	32	21

Table 5: Employer distribution within different age categories in the 1988 survey. (Row totals equal 100.)

30 percent in 1968 to just over 11 percent in 1988, while the proportion in management jobs has declined from 47 percent to about 20 percent — the slack being taken up by the increase in education. Clearly, these results indicate some very strong trends. The changing nature of TIMS' constituents raises important questions for the organization's management. Is TIMS becoming an overly academic society? Is that good or bad? What services should be changed, if any, to accommodate these trends?

Compensation Levels

We gathered data on base earnings (from primary employer) and total annual earnings from all professional sources (Table 7). Twice as many members have total

Primary Job	1968 Survey %	1988 Survey %
Technical	30	11.2
Technical Management	—	11.5
Business Management	—	9.7
Education (Teaching)	23	58.8
Consultant Management	—	8.7
Management	47	—

Table 6: The primary jobs of TIMS members: A comparison of the 1968 and 1988 surveys.

earnings over \$90,000 as have base earnings exceeding \$90,000 (18.5 percent versus 9.0 percent). Table 8 shows the average base and total salaries for each type of primary job. (Caution is advocated in interpreting these results as they are based on the assumption of a uniform distribution within each salary category.) In general, academic members have a lower base salary than members in technical or business management and consultancy. The variance of academic salaries is much lower. However, academics have the highest supplemental income (an increment of about 24 percent over their base salaries) which makes their total income more competitive with the other groups. The standard deviation indicates high variance in the additional income of academic members, possibly a result of the vagaries of consulting.

	Base Earnings	Total Earnings
Less than \$30k	9.3	8.2
30-60k	55.8	42.5
60-90k	25.8	30.8
90-120k	5.9	11.0
120-150k	1.5	3.3
Over 150k	1.6	4.2

Table 7: The annual earnings of TIMS members in the 1988 survey.

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	Base (\$000)	Total (\$000)
Technical	53.4 (38.7)	57.9 (23.7)
Technical Management	68.1 (32.1)	72.6 (34.5)
Business Management	70.5 (36.3)	77.7 (42.3)
Education	51.9 (22.2)	63.9 (32.4)
Consulting	66.0 (38.7)	76.2 (41.7)

Table 8: The salary levels within the primary job categories. The figures shown represent the average salaries with the standard deviation in parenthesis.

Members in strictly technical areas tend to have lower salaries than those in management or consulting. In fact, a general conclusion drawn from the 1982 survey was that consulting is a game for high rollers, with the highest salaries and variances. This is generally supported by the 1988 data. While 1988 salaries cannot be directly compared with 1982 figures, academic base salaries in 1982 started at around \$30,000 and peaked at around \$48,000. Similarly, in 1982, supervisory positions in industry had base salaries ranging from \$34,000 (less than five years

experience) to \$58,000 (over 20 years experience). Clearly, 1988 salary levels seem much higher, even after adjusting for inflation. This is another reflection of the current seniority of the average TIMS member.

Other Professional Affiliations

Nearly half of TIMS members also belong to ORSA, and the top four professional societies (ORSA, DSI, IIE, and ACM) have not changed in 15 years, although all four organizations now have greater overlap with TIMS than they did in 1973 (Table 9).

Societies	1973 Survey %	1988 Survey %
Operations Research Society of America	40	46.9
Institute of Industrial Engineers	11	14.2
Decision Sciences Institute	10	20.9
Association for Computing Machinery	10	14.4
American Statistical Association	9	9.9
Institute of Electrical and Electronic Engineers	6	10.0
American Marketing Association	4	8.6
American Economics Association	7	6.0
American Management Association	4	2.6
Academy of Management	4	6.6
Econometric Society	5	2.7
Society for Information Management	-	3.7
Association for Systems Management	-	1.1
American Accounting Association	-	2.0
American Association for the Advancement of Science	6	-

Table 9: A comparison of professional memberships of TIMS members in the 1973 and 1988 surveys.

	ORSA	IIE	DSI	ACM	ASA	IEEE	AMA	AEA	AMgtA	Ac Mgt	Eco. Soc.	SIM	ASM	AAA
Technical	58	10	4	14	10	14	2	4	2	0	2	0	1	0
Technical Management	50	14	7	13	8	14	5	3	6	1	1	3	1	0
Business Management	44	8	9	5	6	4	10	6	5	4	3	2	0	3
Education	45	16	31	16	10	9	10	7	1	10	4	5	1	2
Consultant	42	14	5	10	13	15	8	4	7	2	1	3	1	0

Table 10: Professional membership by primary job. All figures are in percentages and represent the percentage memberships in each category.

TIMS business office records suggest that about 35 percent of TIMS members are also members of ORSA. This discrepancy (35 percent versus 46 percent) may be explained by the hypothesis that joint members are more serious and therefore more likely to respond to a survey. Some people think that a fair number of members may identify with a single entity "TIMS-ORSA" and may not actually

belong to both.

A breakdown of professional membership by job category shows that ORSA is the dominant organization within every category (Table 10). One-seventh of the technically-oriented members are affiliated with ACM and IEEE. Business management members are not strongly oriented toward any organization except ORSA. However, one-tenth of them are members of the AMA. DSI is a very prominent second among academics with almost one third belonging to it.

Academics belong to the most societies, 1.67 organizations on the average. Business managers belong to the fewest, 1.09.

Functional Area

The quantitative disciplines on which the organization was based apparently still dominate the membership. Nearly 40 percent of the members claim MS or OR as their main area of work (Table 11). The

Functional Area of Primary Job	1988 Survey
Management science	21.7
Operations research	16.7
Other quantitative disciplines	5.8
Information systems	18.0
Finance	3.8
Marketing	9.1
Operations (production)	12.5
Engineering	7.4
Research and Development	4.3
Consulting	8.3

Table 11: The functional job areas of TIMS members. In the 1967 survey, 85 percent indicated that they "engaged in professional work in the management sciences." According to the 1973 survey, "about 50 percent of respondents worked in the analytical areas (quantitative analysis, computer analysis, mathematics, statistics, and so forth) and 44.4 percent worked in functional areas (finance, accounting, behavioral science, sales, marketing, information systems, and so forth.)"

% of Work	% Respondents
0-20	33.7
21-40	22.8
41-60	14.8
61-80	12.6
81-100	16.1

Table 12: Percentage of respondents considering various proportions of their work to be management science/operations research.

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Number of People supervised	Full time %	Part time %
0	60.2	68.4
1-5	20.0	23.0
6-10	6.5	3.2
11-20	5.6	1.6
21-100	6.0	2.2
Over 100	0.7	0.2

Table 13: Managerial roles of TIMS members as indicated by the number of people supervised.

closely-related area of production has a 12.5 percent representation. Not surprisingly, TIMS is feeling the impact of the information age with almost one-fifth of the membership involved in information-systems-related jobs.

We also asked members the percentage of work they actually did that they would consider to be MS/OR (Table 12). Almost 29 percent considered over 60 percent of their work to be MS/OR, while 33 percent see themselves as doing virtually no work in this area. The remaining 38 percent do some work in MS/OR. These results bear

some similarity to those of the 1982 survey, which found that MS/OR professionals spent between 28 percent and 38 percent of their time on what they considered real MS/OR.

People Supervised

Sixty percent of the members supervise no one full time, and 80 percent supervise five people or less (Table 13). These results are not surprising, considering the dominance of academic members (60 percent) who often do little or no formal supervision.

Value of TIMS Services

A secondary objective of the 1988 survey was to provide a member evaluation of TIMS services in order to see whether the changing needs of members are being accommodated.

Respondents evaluated the usefulness of a number of TIMS services on a five-point scale (Table 14). Publications emerged clearly as the most useful service; national meetings were ranked second. A breakdown of these figures by

	Mean (sd) rating	sd	Rank	% Not aware or not responding
Publications	2.001	1.051	1	3.9
National meetings	2.650	1.257	2	7.7
Colleges	3.128	1.248	3	15.6
Academic Network	3.181	1.355	4	21.4
Special interest meetings	3.248	1.221	5	16.4
Employment service	3.278	1.372	6	18.2
Visiting lectures	3.628	1.214	7	23.6
Local chapters	3.676	1.206	8	18.4
Faculty in residence	3.712	1.201	9	24.4
Student chapters	3.736	1.221	10	23.8
Overseas meetings	3.831	1.240	11	15.3
MS Roundtable	3.930	1.058	12	24.5

Table 14: The value placed on TIMS services by respondents. Each service is rated on a five-point scale with "1" signifying very useful and "5" signifying not very useful.

	Technical	Technical management	Business management	Education	Consultant	Overall
Publications	2.27	2.32	2.37	1.76	2.31	2.00
National meetings	2.79	2.94	3.20	2.39	3.22	2.65
Overseas meetings	4.29	4.25	4.20	3.54	4.23	3.83
Special interest meetings	3.34	3.35	3.40	3.16	3.37	3.25
Colleges	3.42	3.34	3.32	2.98	3.26	3.13
Local chapters	3.45	3.35	3.68	3.80	3.48	3.68
MS Roundtable	3.91	3.82	3.90	3.96	3.93	3.93
Student chapters	3.74	3.83	3.93	3.65	3.97	3.74
Academic network	3.50	3.67	3.67	2.89	3.74	3.18
Employment service	3.30	3.51	3.72	3.11	3.75	3.28
Visiting lecturers	3.73	3.89	3.89	3.48	4.00	4.16
Faculty-in-residence	3.82	3.98	4.01	3.54	4.16	3.71

Table 15: The value of TIMS services to those holding various primary jobs. The numbers indicate the mean value on a five-point scale where "1" is very useful and "5" is not very useful.

respondent's primary job shows that academic members gave publications a significantly higher rating than did other job categories. National meetings were also

rated higher by academic members than by others (Table 15). Services that were rated higher by practitioners than by academics were local chapters and the

Experience (years)	<5	5-10	11-20	>20
Publications	1.71	1.90	2.14	2.11
National meetings	2.25	2.52	2.78	2.84
Overseas meetings	3.61	3.82	3.91	3.89
Special interest meetings	3.01	3.28	3.31	3.33
Colleges	2.89	3.08	3.21	3.21
Local chapters	3.60	3.69	3.72	3.65
MS Roundtable	3.76	3.96	4.00	3.93
Student chapters	3.28	3.68	3.90	3.88
Academic network	2.56	2.99	3.39	3.48
Employment service	2.75	2.97	3.38	3.75
Visiting lecturers	3.24	3.56	3.76	3.77
Faculty-in residence	3.24	3.65	3.83	3.92

Table 16: The value of TIMS services and professional experience. The numbers indicate the means of a five-point scale where "1" is very useful and "5" in not very useful.

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Number of meetings attended per year	0-1 %	2-4 %	>5 %
Technical	79	20	1
Technical management	72	25	3
Business management	81	18	1
Education	70	29	1
Consultant	78	18	4

Table 17: Attendance at meetings within each primary job category. The row totals equal 100.

Management Science Roundtable.

Table 16 shows the value of TIMS services to members with varying years of experience. Members with greater professional experience have given a lower rating to almost every service. The tenure pressures faced by young academics may explain their enthusiasm for such services as publications, national meetings, and local chapters. Possibly, more experienced academics lose enthusiasm or develop an "I've seen it all" attitude. While these explanations are speculative, the finding is of special concern in the face of the aging of the TIMS membership.

Meetings

Academics attend marginally more meetings on the average than practitioners (Tables 17 and 18). This is consistent with the results of the 1967 survey where academics reported attending 0.41 meetings per year and industrial members 0.29. Academics' primary reason for

attending is to present a paper while practitioners, especially with technical jobs, attend mainly for the subject matter. Further, building and maintaining contacts is an important reason for all categories. The ability and prominence of speakers are no longer major reasons for most attendance — in 1967 they were the second and third most important reasons for both industrial and academic members.

For national meeting dates and days, nearly half the members (47.4 percent) preferred dates in the latter half of April and of October, about 30 percent preferred the first half of those months, and about 20 percent preferred earlier dates. The existing Monday through Wednesday meeting schedule was preferred by about one-third of respondents, while about 20 percent preferred a Wednesday through Friday schedule. Other combinations were less favored; a Tuesday through Thursday schedule was least popular.

	Technical	Technical management	Business management	Education	Consultant
Subject matter	70	76	61	52	70
Speaker's prominence	13	18	15	10	14
Speaker's ability	9	12	6	6	6
Contacts	44	42	36	52	40
Locale	27	23	13	19	19
Recruiting	11	19	7	19	13
Presenting paper	37	37	23	75	31

Table 18: Percentage of respondents within each primary job category that indicated reasons for attending meetings. Row totals > 100 as more than one response could be given.

The changes members wanted in the meetings were “more precise scheduling” (about two-thirds) and “more social functions” (about one-third), but only about 20 percent preferred “more social with increased fee.” Twenty percent favored “more evening sessions” and “more simultaneous sessions,” while only 12 percent wanted “four day meetings.”

Journal Preferences

Respondents were asked to rank the usefulness of 24 journals on a three-point scale (Table 19). *Interfaces*, *Management Science*, and *OR/MS Today* are rated highly and are read by a clear majority of TIMS members. Other journals such as the

Communications of the ACM, *Journal of Marketing Research*, *Management Information Systems Quarterly*, and *Decision Sciences* are rated highly but cater to a specialized clientele; that is, less than 50 percent of the members read them. A comparison of the 1988 results with the 1973 survey may not be very meaningful, considering the recent proliferation of journals. Nevertheless, in 1973, besides *Management Science* and *Interfaces*, members most frequently mentioned *Operations Research*, *Harvard Business Review*, *Decision Sciences*, and *JASA*, all of which are still highly regarded.

A ranking of the top five journals for

Name of journal	Rank	Mean	SD	Do not receive or read # (%)
<i>Interfaces</i>	1	1.605	.626	286 (11.6%)
<i>Management Science</i>	2	1.667	.675	133 (5.4%)
<i>OR/MS Today</i>	3	1.796	.679	249 (10.2%)
<i>Communications of ACM</i>	4	1.851	.726	1735 (71.0%)
<i>Journal of Marketing Research</i>	5	1.881	.753	1937 (79.4%)
<i>Operations Research</i>	6	1.888	.763	912 (37.4%)
<i>MIS Quarterly</i>	7	1.889	.781	1862 (76.3%)
<i>Decision Sciences</i>	8	1.890	.699	1415 (58.0%)
<i>Marketing Science</i>	9	1.892	.776	1814 (74.3%)
<i>IIE Transactions</i>	10	1.930	.660	1652 (67.7%)
<i>Harvard Business Review</i>	11	1.952	.645	1116 (45.8%)
<i>Journal of the American Statistical Association</i>	12	1.989	.710	1812 (74.2%)
<i>Naval Research Logistics Quarterly</i>	13	2.011	.669	1798 (73.6)
<i>Omega</i>	14	2.073	.634	1835 (75.1%)
<i>Mathematical Programming</i>	15	2.082	.712	1893 (77.6%)
<i>American Economic Review</i>	16	2.088	.693	1940 (79.5%)
<i>Econometrica</i>	17	2.109	.695	1865 (76.4%)
<i>Industrial Engineering</i>	18	2.126	.663	1717 (70.3%)
<i>Journal of Finance</i>	19	2.144	.701	2065 (84.6%)
<i>Science</i>	20	2.143	.644	1756 (71.9%)
<i>Journal of Business</i>	21	2.153	.605	1923 (78.8%)
<i>Transportation Science</i>	22	2.161	.669	1999 (81.9%)
<i>Math of OR</i>	23	2.192	.709	1737 (71.2%)
<i>Datamation</i>	24	2.215	.682	1730 (70.8%)

Number of respondents: 2,441

Table 19: Ranking of 24 journals as evaluated on a scale where “1” signifies important source and “3” signifies little value.

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Rank	Technical	Technical management	Business management	Education	Consultant
1	<i>Interfaces</i> (1.57) 12%	<i>Interfaces</i> (1.58) 14%	<i>Interfaces</i> (1.70) 14%	<i>Management Science</i> (1.49) 5%	<i>Interfaces</i> (1.60) 12%
2	<i>OR/MS Today</i> (1.75) 10%	<i>OR/MS Today</i> (1.76) 10%	<i>Harvard Business Review</i> (1.81) 38%	<i>Interfaces</i> (1.60) 14%	<i>OR/MS Today</i> (1.86) 15%
3	<i>Communications of ACM</i> (1.88) 78%	<i>Management Science</i> (9.93) 11%	<i>Management Science</i> (1.80) 12%	<i>Operations Research</i> (1.73) 35%	<i>Marketing Science</i> (1.86) 76%
4	<i>JASA</i> (1.92) 75%	<i>Harvard Business Review</i> (1.93) 54%	<i>OR/MS Today</i> (1.94) 18%	<i>OR/MS Today</i> (1.78) 12%	<i>Harvard Business Review</i> (1.88) 48%
5	<i>Management Science</i> (1.94) 12%	<i>Marketing Science</i> (1.95) 77%	<i>Decision Sciences</i> (2.00) 76%	<i>Communications of ACM</i> (1.80) 64%	<i>JASA</i> (1.89) 83%

Table 20: Top five journals by primary job. The numbers indicate the mean score on a three-point scale where "1" equals an important source and "3" equals little value. Percentages represent those within the job category who don't receive or read the journal.

each primary job category is dominated by *Interfaces*, with academics holding *Management Science* in the highest esteem (Table 20). The business management and consultant groups rank *Harvard Business Review* and *Marketing Science* in the top five, while all groups rate *OR/MS Today* highly. *Management Science* is a notable absentee in the consultant group.

Preferences of TIMS and ORSA Members

In order to gain some perspective on the differences between the TIMS and ORSA members' valuations of TIMS services, we performed cross tabulations of "TIMS only" versus "TIMS and ORSA" members (Tables 21 and 22). Because we sent the survey only to TIMS members, we have no data on "ORSA only" members.

In general, TIMS-ORSA members valued TIMS services higher than did TIMS-only members (with the exception of the Colleges). TIMS-ORSA members place much higher value on national TIMS/ORSA meetings than do TIMS-only members.

The reading preferences of the two groups are very different, as is obvious from the publication rankings and the significance of the difference in means. The findings are somewhat consistent with the Gupta and Simon Survey [1974]; they note that membership in ORSA is a fairly good discriminator between TIMS members as far as their reading habits are concerned. For instance, in their survey, TIMS-ORSA members found *Management Science* more useful and *Interfaces* less

useful than did members of TIMS only. In our survey, *Management Science* is clearly the most valued journal for ORSA members, and they value *Interfaces* less than *Management Science*, while TIMS-only members value *Interfaces* as their number one journal. It should be noted that this is despite the fact that the rating of *Interfaces* for TIMS-ORSA members is higher (even though its rank is lower), but the difference is not significant.

The ranks and ratings for information-systems-related journals show wide disparity. TIMS-ORSA members ranked *Management Information Systems Quarterly*

20th among 24 journals, while TIMS-only members ranked it third! Similar great differences exist for *Communications of ACM*.

As might be expected, the ORSA journals (*Operations Research*, *Transportation Science*, *Math of OR*) are ranked much higher by TIMS-ORSA members than by TIMS-only members.

Overall, the two groups have quite different reading preferences.

Summary and Conclusion

The results of the 1988 survey contribute to our understanding of the evolution of the field of management science (MS)

Service	TIMS and ORSA	TIMS only	Overall
Publications	1.960 (1.035)	2.013 (1.050)	2.001 (1.051)
National TIMS/ORSA meetings	2.361 (1.207)	2.877** (1.247)	2.650 (1.257)
Colleges	3.160 (1.195)	3.095 (1.299)	3.128 (1.248)
Academic network	3.126 (1.329)	3.206 (1.376)	3.181 (1.355)
Special interest meetings	3.145 (1.199)	3.330** (1.240)	3.248 (1.221)
Employment service	3.131 (1.365)	3.420** (1.364)	3.278 (1.372)
Visiting lecturers	3.550 (1.218)	3.689** (1.208)	3.628 (1.214)
Local chapters	3.608 (1.187)	3.750** (1.217)	3.676 (1.206)
Faculty-in-residence	3.653 (1.200)	3.758* (1.208)	3.712 (1.201)
Student chapters	3.584 (1.226)	3.888** (1.198)	3.736 (1.221)
Overseas meetings	3.705 (1.261)	3.913** (1.200)	3.831 (1.240)
MS Roundtable	3.816 (1.079)	4.056** (1.015)	3.930 (1.058)

Table 21: The value of TIMS services for TIMS-and-ORSA and TIMS-only members. The numbers indicate means and standard deviations based on the five-point scale responses where "1" equals very useful and "5" equals not very useful. The asterisks signify significance levels of 0.1 (one asterisk) and 0.05 (two asterisks) of the difference in means based on the t-statistics.

SURVEY OF TIMS MEMBERSHIP

	TIMS and ORSA --> Rank	TIMS only --> Rank
<i>Management Science</i>	1.582 --> 1 (.658)	1.726 --> 4** (.674)
<i>Interfaces</i>	1.592 --> 2 (.631)	1.619 --> 1 (.615)
<i>OR/MS Today</i>	1.652 --> 3 (.643)	1.927 --> 8** (.692)
<i>Operations Research</i>	1.754 --> 4 (.749)	2.129 --> 18** (.725)
<i>IIE Transactions</i>	1.879 --> 5 (.670)	1.978 --> 12** (.642)
<i>Naval Research Logistics Quarterly</i>	1.942 --> 6 (.644)	2.153 --> 20** (.697)
<i>Mathematical Programming</i>	1.960 --> 7 (.715)	2.296 --> 22** (.659)
<i>Marketing Science</i>	1.979 --> 8 (.746)	1.814 --> 6* (.788)
<i>Decision Sciences</i>	1.985 --> 9 (.687)	1.818 --> 7** (.697)
<i>Communications of ACM</i>	1.990 --> 10 (.687)	1.710 --> 2** (.734)
<i>Harvard Business Review</i>	1.992 --> 11 (.662)	1.942 --> 9 (.633)
<i>Journal American Statistical Association</i>	1.993 --> 12 (.733)	1.966 --> 10 (.696)
<i>Journal of Marketing Research</i>	2.012 --> 13 (.687)	1.801 --> 5** (.772)
<i>Transportation Science</i>	2.025 --> 14 (.666)	2.310 --> 23** (.695)
<i>Math of OR</i>	2.099 --> 15 (.699)	2.376 --> 24** (.689)
<i>Econometrica</i>	2.143 --> 16 (.679)	2.064 --> 15 (.708)
<i>Journal of Finance</i>	2.162 --> 17 (.680)	2.122 --> 17 (.725)
<i>Science</i>	2.167 --> 18 (.642)	2.132 --> 19** (.645)
<i>American Economic Review</i>	2.169 --> 19 (.708)	2.020 --> 13** (.685)
<i>MIS Quarterly</i>	2.179 --> 20 (.767)	1.716 --> 3** (.748)
<i>Industrial Engineering</i>	2.185 --> 21 (.665)	2.051 --> 14** (.659)
<i>Omega</i>	2.192 --> 22 (.624)	1.972 --> 11** (.616)
<i>Journal of Business</i>	2.243 --> 23 (.603)	2.103 --> 16** (.604)
<i>Datamation</i>	2.284 --> 24 (.694)	2.182 --> 21* (.670)

Table 22: The value of publications for members versus nonmembers of ORSA. The numbers indicate the means and standard deviations based on the three-point scale responses where "1" equals an important source and "3" equals little value. Significance levels of differences between the groups are 0.1 (one asterisk) and 0.05 (two asterisks).

and suggest issues for TIMS.

Overall, management science continues to become more identifiable as an academic field than one of practice. This may be because its tools, techniques, and concepts have become so well integrated into the practice of businesses and other organizations that many of those who practice it do not think of themselves as management scientists.

Generally, TIMS is doing well in providing the two primary services professional societies provide. Its publications and national meetings are highly visible and well regarded.

The aging of TIMS' members suggests that the institute needs to reach out to younger people and to those who practice MS but who may identify with some other field. We suggest that TIMS place greater emphasis on informing students and on such formal activities as student chapters and reduced-rate student memberships.

Since more than 20 percent of members are unaware of some TIMS services, more publicity may be warranted. Regular informative columns in *OR/MS Today* and other media may be desirable.

Since younger members generally value the services more than older members, improving publicity about services may also function as a recruitment strategy for younger members.

Because practitioners are more interested in the subject matter of meetings, improving the quality, quantity, and drawing power of presentations at meetings might attract more practitioners to meetings and to membership.

TIMS should also consider its

relationships with other organizations. The data on overlapping memberships suggest the potential for more joint meetings and cooperative ventures.

Overall, the management science profession has undergone radical change since its early days. Generally TIMS has done quite well in serving its members and in adapting to those changes. However, it is important that we not become self-satisfied and that we continue to monitor the evolution of the field.

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References

- Abendroth, W. W. 1983, "The CPMS assessment study: A prototype," unpublished paper.
- Gupta, A. and Simon, L. S. 1974, "Characteristics and reading habits of TIMS members," *Interfaces*, Vol. 4, No. 3 (May), pp. 63-75.
- Hall, J. R. 1984, "Career paths and compensation in management science: Results of a TIMS membership survey," *Interfaces*, Vol. 14, No. 3 (May-June), pp. 15-23.
- King, W. R. 1983, "Survey reveals trends," *The Planner*, North American Society for Corporate Planning, March-April, pp. 4-5.
- King, W. R.; Kilmann, R.; and Sochats, K. 1978, "Designing scientific journals: Concepts and survey results," *Management Science*, Vol. 24, No. 7 (March), pp. 774-784.
- Schaffir, K. H. 1968, "The TIMS membership survey," *The Bulletin of the Institute of Management Sciences*, Vol. 14, No. 4 (June), pp. 1-8.
- Thornhill, V. D. and Abendroth, W. W. 1981, "TIMS membership survey and CPMS assessment program," unpublished paper.