GAO

United States
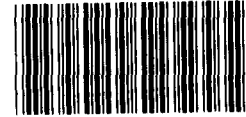**General Accounting Office**
Washington, D.C. 20548

General Government Division

B-249779

April 26, 1993

The Honorable Federico Peña
The Secretary of Transportation

Dear Mr. Secretary:

Total Quality Management (TQM) is a management approach that strives to achieve continuous improvement of quality through organizationwide efforts based on facts and data. TQM also focuses business processes on meeting the needs of customers, both internal and external. Although TQM traditionally has been associated with private sector organizations and their efforts to remain competitive and profitable, in recent years federal organizations have been attempting to implement TQM to cope with budget restrictions and better serve the public.

We recently surveyed federal installations to determine the extent of their use of TQM and learned that 68 percent of the installations surveyed were implementing TQM.[1] An installation, as defined by the Office of Personnel Management, is a unit with a specifically designated head who is not subject to on-site supervision by a higher level installation head and who has been delegated some degree of authority in the performance of personnel management functions. Our survey covered over 2,800 installations, such as Internal Revenue Service Centers, Social Security offices, military depots, and Transportation's Federal Aviation Administration field offices. We included 110 installations of the Department of Transportation in this survey, and the purpose of this correspondence is to provide you a brief summary of the results as they apply to Transportation as well as to compare Transportation results with the results of all surveyed federal installations. We believe this information--particularly data on barriers to TQM--can be useful in your planning and as a baseline for judging future efforts.

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[1]*Quality Management: Survey of Federal Organizations* (GAO/GGD-93-9BR, Oct. 1, 1992).

STATUS OF TQM

Figures 1 and 2 show the percentage of government installations and Transportation installations implementing TQM. As figure 1 shows, about 68 percent of the federal installations responding to our survey reported they were starting or already implementing TQM. Figure 2 shows about 55 percent of the Transportation installations responding to our survey were starting or already implementing TQM. Additionally, about 70 percent of the remaining Transportation installations reported that they planned to implement TQM.

Figure 1: Percentage of Government Installations Implementing TQM

Never attempted implementation

2%
Started and stopped

2%
Other

28%

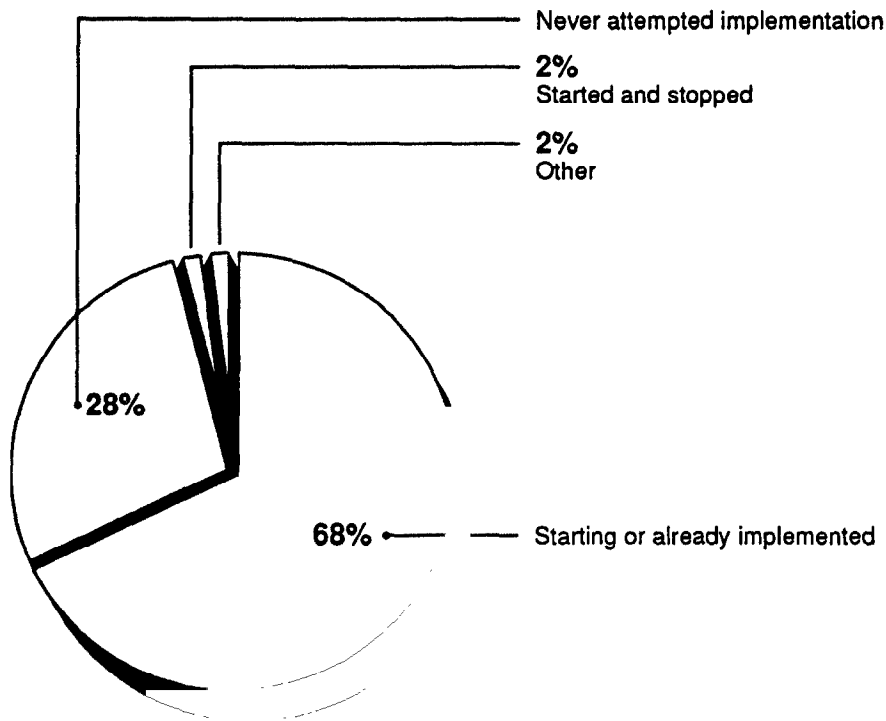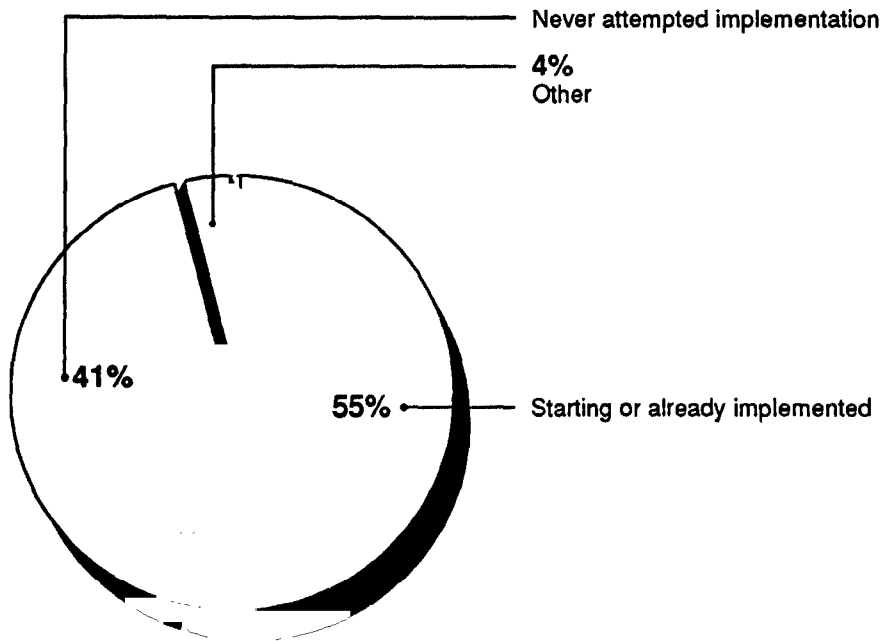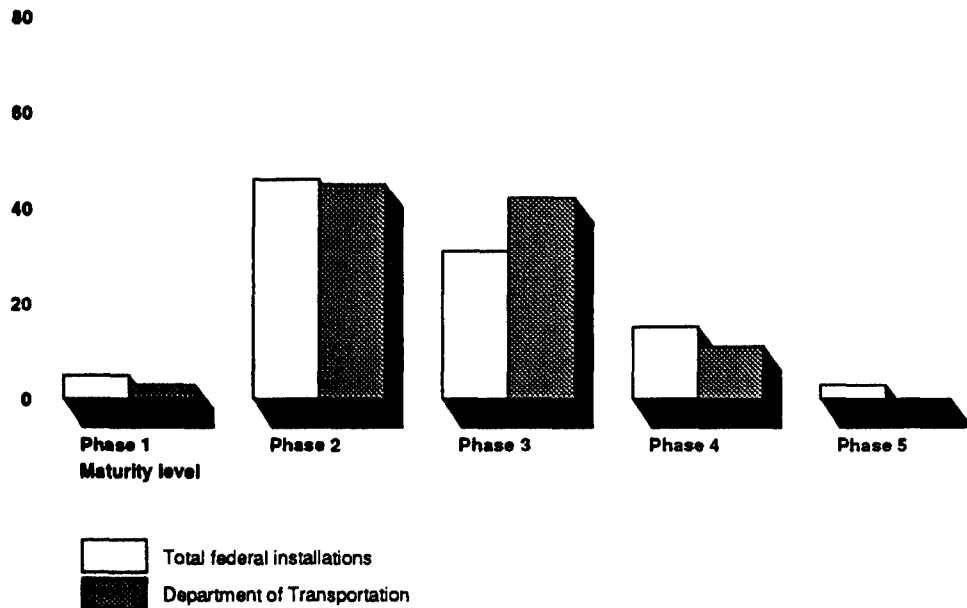68% — Starting or already implemented

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Figure 2:   Percentage of Transportation Installations
Implementing TQM

To obtain a picture of the status of federal TQM efforts, we
asked installations to report their efforts in terms of a five-
phase maturity scale. Maturity definitions ranged from Phase 1,
preliminary TQM efforts, to Phase 5, institutionalized efforts
that are achieving significant benefits (see enc. I for
definitions). As figure 3 shows, 51 percent of the total federal
installations responding to the survey reported being in Phase 1
or 2, while nearly half (48 percent) of the Transportation
installations reported being in these early phases. The fact
that many installations were in the early phases reflected the
relative newness of Transportation efforts; 58 percent of the
installations implementing TQM reported beginning TQM efforts
within the past 2 years. None of the Transportation
installations reported being in Phase 5.

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Figure 3: Status of TQM

100 Percent of organizations with TQM efforts

80

60

40

20

0

| Phase 1 | Phase 2 | Phase 3 | Phase 4 | Phase 5 |
| Maturity level | | | | |

Total federal installations

Department of Transportation

In our survey of federal installations, we asked respondents about the extent of their involvement in 43 activities commonly undertaken by organizations involved in TQM. Such activities include providing training in TQM tools for employees, establishing quality councils or steering groups, and establishing problem-solving teams. Installations reported that their involvement in these activities increased as maturity increased. In other words, installations identifying themselves as more mature in TQM also more frequently said they were doing the 43 activities commonly associated with TQM.

Comparing Transportation installations' involvement in these activities with reported maturity phases, we discovered that
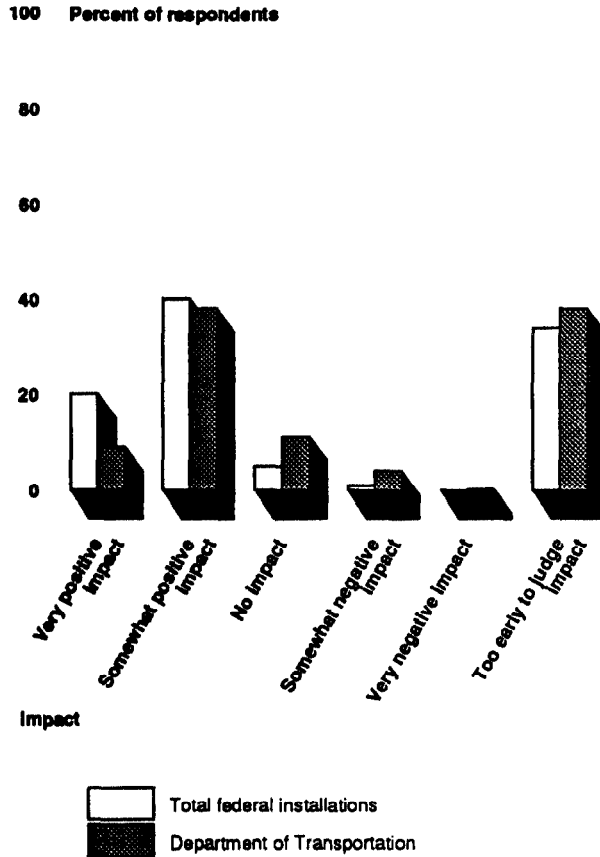
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Transportation generally reflected the same trend as in the total survey--that is, as Transportation installations' maturity increased, they more frequently reported doing TQM activities. For example, 45 percent of the combined Phase 1 and Phase 2 installations provided training in TQM tools for employees, whereas 83 percent (five of six) of the Phase 4 organizations provided such training.
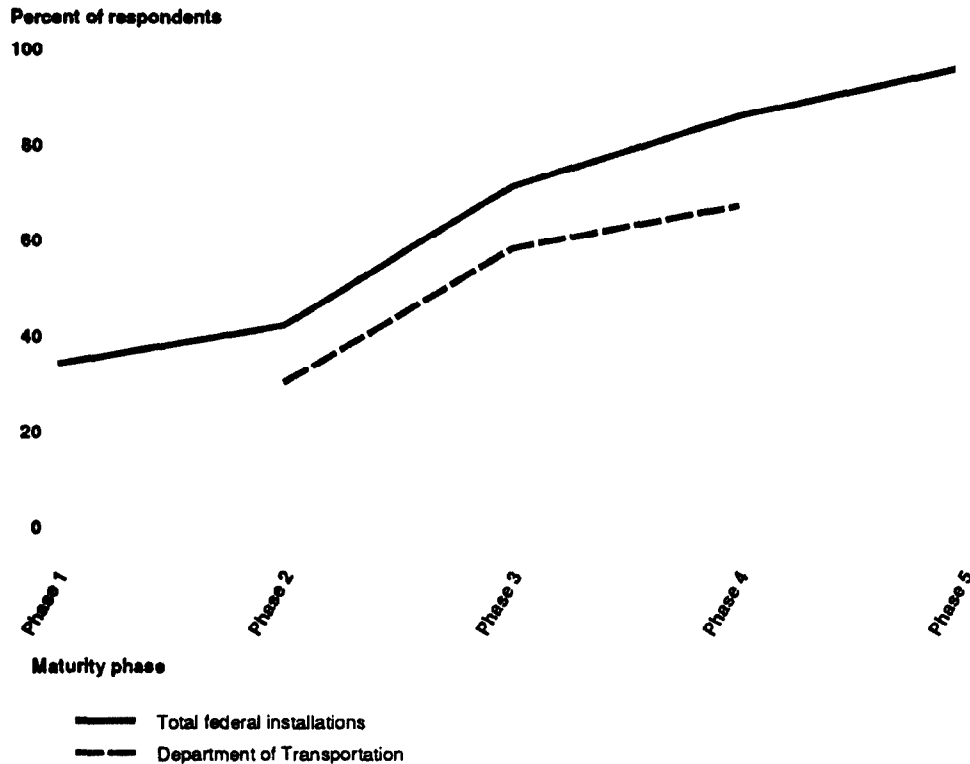

BENEFITS OF TQM

We considered benefits in two ways: (1) effect on external customers as reflected by overall organizational performance and (2) effect on internal customers as reflected by internal operating conditions. We asked respondents to assess TQM's effect on organizational performance in terms of productivity, reductions in costs, quality of products and services, overall service to customers, customer satisfaction, and timeliness. To depict the overall impact, we developed an index that is the average of responses to our questions on the degree of impact. Figure 4 compares Transportation and total federal responses and shows that almost half (47 percent) of the Transportation installations reported TQM had a very positive to somewhat positive respondents impact on performance, about four percent reported it had a somewhat negative impact, about 38 percent felt it was too early to judge the impact of TQM on performance.

Figure 4: Impact of TQM on Performance

100   Percent of respondents

80

60

40

20

0

Very positive
impact

Somewhat positive
impact

No impact

Somewhat negative
impact

Very negative impact

Too early to judge
impact

Impact

☐ Total federal installations
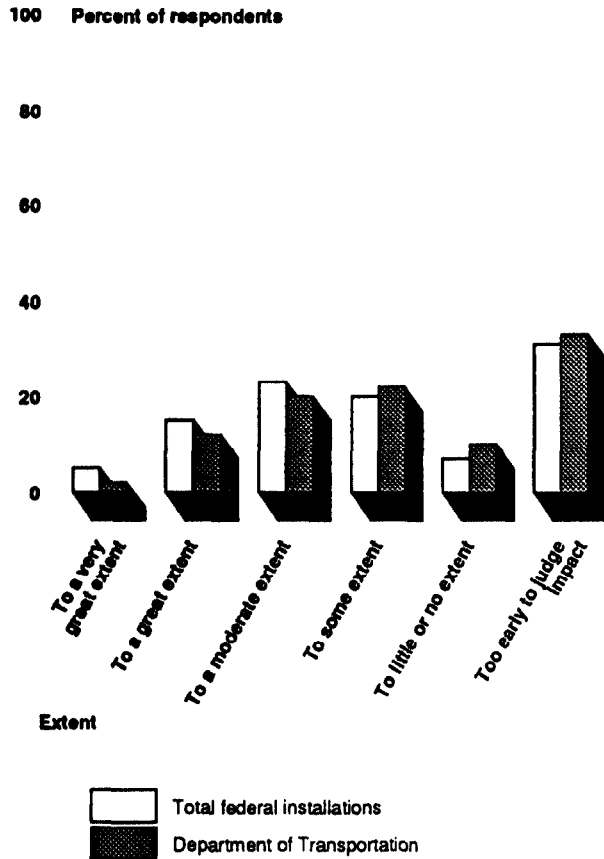
▦ Department of Transportation

Reported benefits increased as maturity increased. We compared
the composite index of responses on external benefits with
maturity phases and learned that more mature installations
reported greater benefits. Figure 5 shows, by maturity phase,
the percentage of total federal respondents and Transportation
respondents reporting somewhat positive to very positive
benefits. The figure does not show Phase 1 or Phase 5
Transportation installations because the number of installations
reported being in Phase 1 was too small for our analysis, and
none reported being in Phase 5.

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Figure 5: Respondents Reporting Increased
Organizational Performance

Percent of respondents

Total federal installations

Department of Transportation

For internal operating conditions, we asked the installations to
identify the impact of TQM on each of 13 internal operating
conditions, such as communications and labor-management
relations. To illustrate the benefits, we developed an index in
the same manner as for the organizational performance indicators.
Figure 6 compares Transportation and total federal responses and
shows that Transportation installations generally reported
somewhat less benefits than the total of all surveyed federal
installations.

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Figure 6: Extent of Positive Impact on Internal Operating Conditions

100 **Percent of respondents**

80

60

40

20

0

Extent — To a very great extent, To a great extent, To a moderate extent, To some extent, To little or no extent, Too early to judge impact

☐ Total federal installations

■ Department of Transportation

In a manner similar to the overall organizational benefits, we compared the composite index of benefits with maturity phases and noted that reported internal conditions improved as maturity increased. Figure 7 shows the percent of respondents reporting a moderate to very great positive impact, by maturity phase, for both Transportation and the total federal respondents. The figure does not show Phase 1 or Phase 5 Transportation

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installations because for our analysis too small a number of installations reported being in Phase 1, and none reported being in Phase 5.

Figure 7: Respondents Reporting Positive Impact on Internal Operating Conditions

100 Percent of respondents

Total federal installations
Department of Transportation
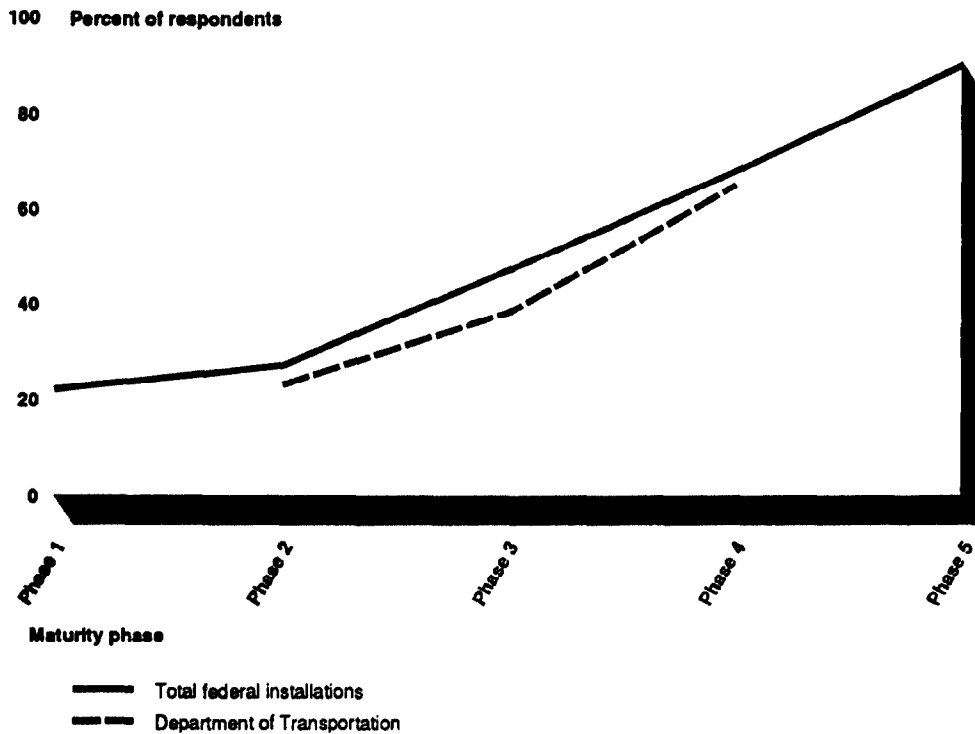
BARRIERS TO TQM

We asked all the federal installations we sent our recent survey to about the significance of 21 potential barriers to implementing TQM that had been identified through our research. Nine barriers were said to be moderate to very major problems by 39 percent or more of the total federal respondents.

Figure 8 shows that Transportation respondents generally concurred with the category of barriers identified in the total

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federal survey and the percentage of Transportation and total
federal respondents who reported these categories were barriers.
Compared to total federal responses, Transportation's responses
were generally higher. It should be noted that many of the top
nine barriers reported by the total federal respondents were
related to employee issues, such as (1) employees do not believe
they are empowered to make changes, (2) employees lack sufficient
information on how to use TQM tools, and (3) employees lack
information and training on TQM concepts and theory.

Figure 8: Respondents Reporting Barriers Were Moderate
to Very Major Problems to Implementing TQM

100 Percent of respondents

80

60

40

20

0

Barriers

Total federal installations
Department of Transportation

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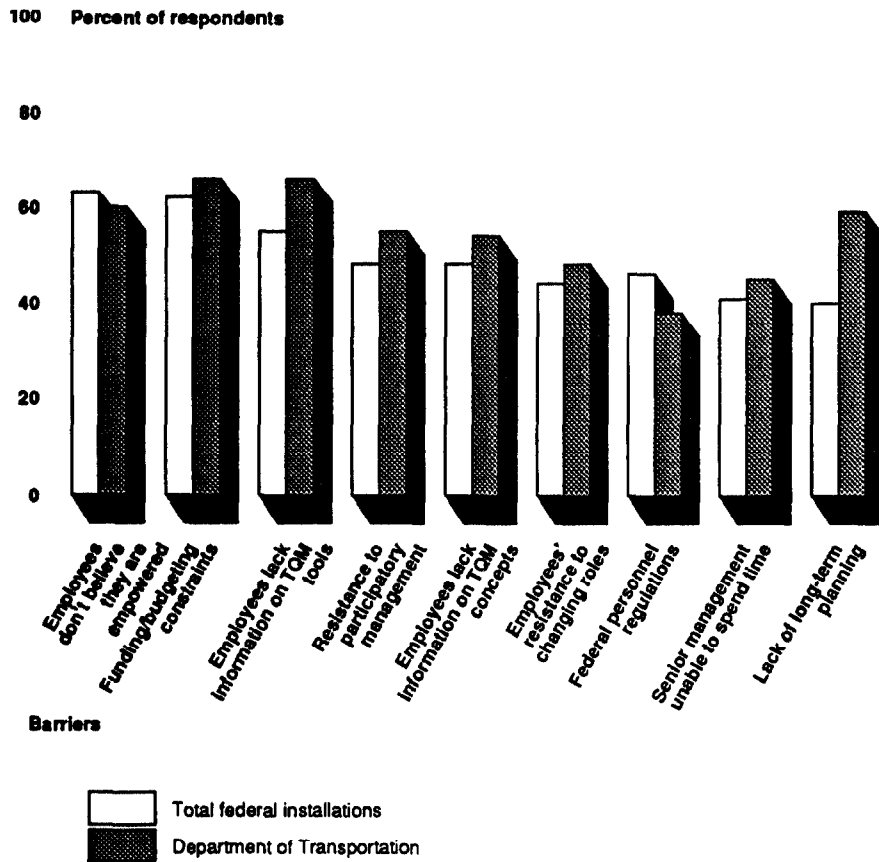
Eight of Transportation's top nine barriers were also among the top nine barriers reported by all federal respondents. The barrier reported among Transportation's top nine that was not included in the overall top nine was disconnect between strategic quality plan goals and the installation's other strategic plans. Table 1 lists the top nine barriers reported by Transportation respondents.

Table 1: The Top Nine Barriers Reported by Transportation Respondents as Moderate to Very Major Problems

Barriers to implementing TQM	Percent
1. Employees have insufficient information on how to implement TQM and use TQM tools.	66
2. Funding/budgeting constraints.	66
3. Employees do not believe they are empowered to make changes.	60
4. Lack of long term planning approach.	59
5. Resistance to moving toward a participatory style of management.	55
6. Employees have insufficient information and training on the theory, concepts, and design of TQM.	54
7. Employees' resistance to changing roles or changing organizational structures.	48
8. Disconnect between strategic quality plan goals and the installation's other strategic plans.	47
9. Senior management at the installation unable to spend sufficient time on TQM.	45

Total federal respondents reported that the barriers became less significant in later phases and Transportation respondents mostly concurred. However, Transportation generally reported barriers became only slightly less significant in later phases. For

example, 32 percent of the combined Phase 1 and 2 Transportation installations reported that resistance to measuring employee attitudes was a significant barrier, while 26 percent of the combined Phase 3 and 4 Transportation installations saw this barrier as significant. While 26 percent of the combined Phase 1 and 2 Transportation installations reported that resistance to soliciting external customer feedback was a significant barrier, 18 percent of the combined Phase 3 and 4 Transportation installations reported that this was a significant barrier.

SUMMARY

Our survey of federal TQM efforts indicated that as installations invested more time and effort in TQM activities, they matured in the implementation of TQM, found that the barriers became less difficult, and reaped greater benefits. Although this also occurred at the Department of Transportation to some extent, Transportation's experiences generally appeared to be slightly less positive overall.

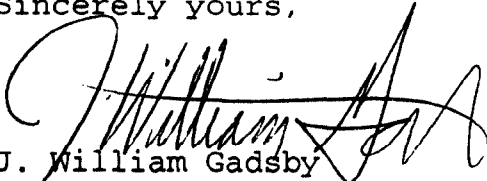\-   -   -   -   -

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We have enclosed a copy of our report <u>Quality Management: Survey of Federal Organizations</u> (GAO/GGD-93-9BR, Oct. 1, 1992) to provide information on the background; results; and objective, scope, and methodology of the total survey.

We hope you will find this information useful in guiding your quality management initiatives and in improving service to your customers under today's budget constraints. We will make copies of this correspondence available to others upon request.

The major contributors to this correspondence are listed in enclosure II. If you have any questions, please call me on (202) 512-8387.

Sincerely yours,

J. William Gadsby
Director, Government Business
 Operations Issues

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PHASES OF TQM IMPLEMENTATION

PHASE 1 - DECIDING WHETHER TO IMPLEMENT TQM

Management is researching or deciding whether to implement TQM, but no formal decisions or activities have been initiated by top management. A few employees may have attended quality conferences or network meetings, but the installation as a whole has yet to be informed or involved in a TQM project.

PHASE 2 - JUST GETTING STARTED

TQM efforts are in the early planning and implementation phase. Management has made a formal decision to start TQM and has communicated this to the organization. The organization's mission and vision have been articulated. A few quality structures, such as quality councils, steering committees, or teams, have been established, and some awareness training has been given. Preliminary quality planning has been done. Pilot programs or newly initiated installationwide efforts to improve quality are included in this phase.

PHASE 3 - IMPLEMENTATION

Specific TQM processes designed to improve quality are in place. TQM training for management and employees is beyond the orientation/awareness stage and focuses on TQM tools and techniques and team-related activities. Measures of quality and productivity have been identified and specific goals have been set.

PHASE 4 - ACHIEVING RESULTS

The installation has a sustained TQM effort and has begun to achieve and document significant results. Systemic, cross-functional, and/or organizational achievements from the TQM effort have been realized.

PHASE 5 - LONG-TERM INSTITUTIONALIZATION

The installation has incorporated all of the principles and operating practices of TQM throughout much of the organization. The installation has documented substantial improvements in quality and customer satisfaction resulting from these efforts and is making consistent and continuous improvement throughout. An installation in this phase may have been recognized as a Quality Improvement Prototype Award winner or may be a recipient of the President's Award for Quality.

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