Participation in the design of performance management systems: a quasi-experimental field study

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Summary
In the literature on the relationship between participation in decision making and performance, a tell-and-sell strategy is considered a viable alternative to participation. In contrast, we argue that in organizational settings, when a sensitive and important issue is at stake, participation of a form to be characterized as formal, long term, direct, and with a high degree of participant influence is more effective than a tell-and-sell strategy. Using a quasi-experimental design with a participation, a tell-and-sell, and a control condition, a ProMES performance management system was implemented in the field service department of a Dutch supplier of photocopiers. Outcome feedback to individual technicians resulted in an average performance increase in the participation condition that was significantly higher than the increase found in the tell-and-sell condition. Satisfaction with the program, and the perceived usefulness of the feedback, were significantly higher in the participation condition. In both experimental conditions, the performance increase was significant compared to the control condition. An explanation for these findings is discussed, as are implications for theory and practice. Copyright © 2004 John Wiley & Sons, Ltd.

Introduction

Methods for designing performance management systems (PMS), such as the productivity measurement and enhancement system ProMES (e.g., Pritchard, 1990, 1995a; Pritchard, Holling, Lammers, & Clark, 2002) or Management by Objectives (e.g., Drucker, 1976; Rodgers & Hunter, 1991), emphasize the importance of employee participation in system design. It has been convincingly demonstrated that participatively designed performance management systems can indeed result in significant and substantial performance increases (Pritchard et al., 1988, 1989). However, developing and implementing performance management systems in real-life organizations entails a large number of interventions in addition to participation. The design of a PMS entails components such as performance indicators, goals, and feedback. Implementing a PMS implies, among others, providing feedback, discussing feedback, solving problems, and setting goals. Thus, the question arises whether the participative
development of a PMS, being only one of several interventions involved, indeed plays the critical role that often is assumed. The purpose of this article is to shed some light on this issue. More precisely, the central question is whether it is possible to obtain performance increases of the magnitude reported in the literature, when, instead of implementing a participatively developed PMS, an identical PMS is implemented, preceded by a tell-and-sell introduction of that system.

ProMES: productivity measurement and enhancement system

In order to be as precise as possible about the context in which we will address the above question and about form of participation as operationalized in this study, we will start with a short introduction of ProMES. ProMES is a participative development method for performance management systems, the design of which has to fulfill a number of specific design requirements. Participative development entails the involvement of employees in generating, evaluating, and deciding on all components of the PMS that they themselves will use as a control loop for self-regulation. These components are: the employees’ areas of responsibility, performance indicators (operational definitions of relevant aspects of those areas of responsibility), transformation functions through which the contribution of indicator performance to overall performance can be determined (so-called contingencies), and a feedback report. The development process, in which employees and their direct supervisor take part, is guided by a facilitator who ensures that all participants adhere to a core decision-making rule—agreed upon beforehand—that implies that decisions are made on a basis of consensus arrived at through a process of discussion in terms of arguments. An important aid in judging the quality of arguments is a number of evaluation criteria or design requirements. For example, indicators should be controllable, i.e., employees should be the main factor of influence on indicators included in the system. Thus, arguments for and against the controllability of proposed indicators are thoroughly discussed in development sessions. As soon as the development team has reached consensus on the basic components of the PMS, there is a next round of participative decision making in which those components are proposed to management in one or more review and approval sessions. These sessions are also guided by the facilitator who sees to it that all participants adhere to the agreed decision-making rule of discussion in terms of arguments, until consensus is reached. Very often, consensus is only reached after some negotiation has taken place. For example, in many cases the development team is only prepared to take responsibility for a particular performance indicator, if management allows for the resources or autonomy necessary to make the indicator controllable by the employees.

Implementing a performance management system that has been designed participatively versus assigned by means of tell-and-sell

Typical components of a PMS such as developed by ProMES are multidimensional performance indicators, feedback, and objectives or goals. The positive effects of combining specific and challenging goals with timely, specific, and positive outcome feedback have been well documented, both in laboratory and in field settings (e.g., Algera, 1990; Alvero, Bucklin, & Austin, 2001; Balcazar, Hopkins, & Suarez, 1986; Kluger & DeNisi, 1996; Locke & Latham, 1990, 2002). Given the effectiveness of such interventions, the question to be addressed in this study is whether there is added value in participatively developing the components of PMS that enable such interventions. Methods for designing PMS emphasize the importance of employee participation in system design, assuming that high participation produces cognitive benefits (e.g., better understanding of job priorities, development of effective task strategies) and motivational gains (e.g., commitment to the system, acceptance of feedback and
goals) (e.g., Pritchard, 1990; Rodgers & Hunter, 1991). The same arguments are mentioned in the literature on participation (Latham, Winters, & Locke, 1994; Locke & Schweiger, 1979; Wagner, Leana, Locke, & Schweiger, 1997) when it comes to the assumed mechanisms underlying the effects of participation: performance increases due to participation are attributed to both cognitive mechanisms (such as increased communication, better utilization of knowledge, increased understanding of the job) and motivational mechanisms (less resistance to change, sense of control, growth in mutual trust, acceptance of and commitment to changes and decisions). Actually, these arguments go back as far as the classical studies on group decision making by Coch and French (1948), Lewin (1952), and Maier (1973).

We join this line of reasoning and hypothesize that implementation of a PMS that is developed participatively in accordance with ProMES guidelines will have larger effects on performance compared to the implementation of an identical PMS that is introduced by means of a tell-and-sell introduction, because participation operationalized as above will have larger positive effects on the cognitive and motivational mechanisms mentioned than a tell-and-sell introduction. This can be illustrated as follows.

The specific form of participation focused on in this study, namely the type of participation used in ProMES, puts a heavy emphasis on joint discussions by employees and management on the controllability of performance indicators. This careful review of arguments for and against controllability of performance indicators can be expected to have an effect on performance through the cognitive mechanisms mentioned above. More in particular, these discussions will result in clear-cut ideas on what employees have to do. In addition, these discussions will result in better insights in how they can do what they have to do. In Naylor, Pritchard, and Ilgen’s (1980) theory of behavior in organizations, on which the ProMES method is based (Pritchard, 1995b), motivation is conceived of as the allocation of time and effort to tasks. Consequently, knowing what to do and how to do it are important preconditions for motivation. For instance, by informing one another on the existence of effective task strategies, employees become aware of controllable routes to task completion. This will probably enhance feelings of self-efficacy (Bandura, 1997) and increase expectancies (Vroom, 1964). A positive effect of participation in formulating task strategies on performance, mediated by both self-efficacy and quality of task strategies, was indeed demonstrated by Latham et al. (1994), who state that ‘People who know that they have effective ways of performing a task will be more confident than people who are unsure of how to perform effectively’ (Latham et al., 1994, p. 61).

A second important element of the form of participation employed in this study is the bottom-up procedure followed in the design of the system. This procedure implies that employees are asked to make the first move and take the initiative to define both their responsibilities and the performance indicators for the measurement of those responsibilities. Not until the employees have come to an agreement among themselves that adequate descriptions of their responsibilities and controllable performance indicators have been developed are these responsibilities and indicators offered to the management in the form of a proposal to be discussed together. Following Maier’s (1973, p. 130) statement: ‘People are more likely to accept the decisions that they feel responsible for, as a result of having participated in making them,’ it is to be expected that carefully developed definitions of one’s own responsibilities that are proposed to management for review and approval will have a personal value or valence (Vroom, 1964) for those who have jointly developed these definitions. Thus, also the motivational mechanisms mentioned in the participation literature as possible explanatory concepts may be expected to play a role, given the form of participation examined in this study.

Together, the above arguments form the basis for our first hypothesis:

**Hypothesis 1**: Performance will improve after the implementation of a performance management system that has been designed participatively in a form as prescribed by ProMES.
As said before, the implementation of a participatively developed ProMES PMS entails a number of interventions. We do not believe that the exclusion of just one of those interventions, i.e., the participative development of the PMS, will bereave the remaining ones completely of their effectiveness. There are at least two reasons why some performance improvement might also be expected from a tell-and-sell introduction of a performance management system identical to a system that has been developed participatively. First, explanation and clarification of the arguments why the indicators chosen indeed meet the controllability criterion may be expected to have some impact on the cognitive mechanisms. Secondly, and perhaps more importantly, the actual implementation of a performance management system provides employees with high-quality feedback on their performance and with the possibility of discussing this feedback. On the basis of these latter interventions alone, some performance improvement would be expected (Algera, 1990; Alvero et al., 2001; Balcazar et al., 1986; Kluger & DeNisi, 1996; Locke & Latham, 1990, 2002). This leads to our second hypothesis:

**Hypothesis 2**: Performance will improve after the implementation of a performance management system identical to the one mentioned in Hypothesis 1, when that system has been introduced by means of a tell-and-sell strategy.

Although we expect at least some positive effects from the implementation of a high-quality PMS, introduced in a tell-and-sell way, we do believe that there is added value in developing such a system participatively. The main reason is that in a tell-and-sell introduction employees are only told that other employees apparently have become convinced of the controllability of performance indicators through a thorough discussion of this issue. This seems to be a far weaker intervention with a far lesser impact on cognitions than developing performance indicators oneself, discussing the controllability of those indicators, and having an impact on the decision of whether or not to include those indicators in the final system. A weaker effect is expected from a tell-and-sell introduction of an identical performance management system, because in the case of tell-and-sell there has been no personal investment by those to whom the system is told and sold, in the definitions of the responsibilities and the indicators included in that system. These arguments form the basis for our third hypothesis:

**Hypothesis 3**: Implementation of a participatively (in a form as prescribed by ProMES) designed performance management system will result in a larger performance increase compared to the implementation of an identical system preceded by a tell-and-sell introduction of that system.

Although we believe that the above reasoning provides good arguments in favor of our three hypotheses, we are aware of the debate in the literature on whether one might expect participation to have any effects on performance at all. What we have learned from this debate is that the question, when phrased in terms as general as used here, is an unanswerable one. Already at the start of the debate (Locke & Schweiger, 1979), it was not only concluded that there are numerous mechanisms both cognitive and motivational through which participation in decision making (PDM) may produce high performance, but also that the effectiveness of PDM depends on numerous contextual factors. The PDM research conducted in laboratory settings has not succeeded in encompassing this complexity (Schweiger & Leana, 1986, p. 159), whereas field studies have been struggling with disentangling participation and other causal and contextual variables. The latter point was demonstrated by the reactions to the work of Cotton and his colleagues, who added form of participation to the specter of potential causal factors (Cotton et al., 1988; Cotton, Vollrath, Lengnick-Hall, & Froggatt, 1990). Based on a narrative classification of participation studies, they argued that forms of participation that were formal, direct, and long term, with high employee influence on an important issue (such as participation in work decisions, consultative participation), were more effective than other forms of participation (such as informal participation and representative participation). In their reanalysis of Cotton et al.’s (1988) studies,
Leana, Locke, and Schweiger (1990) excluded multivariate studies involving manipulations beyond participation that, in their opinion, could not be used to support participation as a separate variable. Only 21 per cent of the remaining studies reported positive effect of PDM on performance (against 57 per cent of the studies in Cotton et al.’s, 1988, classification). However, the majority of studies that remained involved forms of participation such as short-term participation and representative participation that were judged the least effective in Cotton et al.’s (1988) review. Thus, one could argue that the failure to isolate the effects of participation in many of the studies involving the potentially most effective forms of participation impeded an effective test of the proposition that different forms of participation are associated with different outcomes.

We agree with Sagie (1994, 1995) that inconsistent findings on the effects of PDM on performance ask for a search for moderators, which may be found among the contextual factors mentioned above. We also agree with Wagner et al. (1997) that researchers should be more explicit about the details of their studies on participation, because without specifying form of participation, the assumed mechanisms, and relevant contextual factors, it will be practically impossible to evaluate the outcomes of those studies. More recently (Latham et al., 1994; Wagner et al., 1997), successful attempts have been made to get a grasp on the motivational and cognitive mechanisms already proposed by Locke and Schweiger in 1979. In line with the above suggestions, we present a study in which participation focuses on the work roles of service engineers (taking into account several context factors with an impact on controllability of work outcomes). The form of participation is formal (launched by management), long term (lasting over a period of almost 2 years), direct (immediate influence of all employees to whom the issue is of concern), with a high degree of participant influence (decisions being taken on the basis of participants’ inputs and the quality of their arguments), and about a sensitive and important issue (the design of a ProMES system for the self-management of the participants’ performance). With reference to the assumed cognitive and motivational mechanisms (formulated by NPI theory, expectancy-valence theory, and self-efficacy theory), we have also provided arguments why this specific form of participation, given this specific context, should be more effective than the tell-and-sell approach. The use of a quasi-experimental design in this realistic field context enables an explicit test of the effectiveness of this form of participation.

Organizational Context

The Organization and its Environment

The organization was a Dutch supplier of office equipment, mainly photocopiers. The company did not manufacture these machines, but bought them from leading Japanese suppliers, sold these under its own name, and provided service. Since the 1970s, the office automation industry had moved from a product-oriented industry via a price-oriented industry to an industry in which companies that were able to meet the high demands placed on service had the competitive edge in a situation where product features and prices hardly differentiated among photocopier suppliers. Through the use of effective and efficient maintenance procedures and sophisticated planning systems, the company had been able to change its image from ‘price fighter’ to all-round dependable supplier with after-sales service as its competitive edge, thus securing a market share of approximately 15 per cent. The company’s customers ranged from very small (e.g., private persons, small businesses) to very large (e.g., multinationals, universities, municipalities). During the 1980s and early 1990s the company had grown from fewer than 100 employees to almost 650 employees, half of whom worked in the service department.
The Field Service Department
This department consisted of 14 geographically dispersed regions. Each service region was headed by a supervisor and consisted of 15–20 service technicians, responsible for individually carrying out preventive maintenance according to prescribed routines, and diagnosing and solving machine malfunctions at clients' offices. Service was provided on approximately 75 types of photocopiers sold up to then, ranging from small copiers for infrequent use ('low volume'), to large copiers with additional features for professional use ('high volume'). This meant that the work-flow was highly complex, since many different types of photocopiers had to be serviced and technical characteristics of each type influenced the results that could be achieved. Depending on experience, technicians worked on 2–10 types of photocopier.

The field service department was characterized by a lack of communication, both horizontally (within regions) and vertically (between regions and service management). The departmental culture was 'top down': decisions were made at the head office, in most cases without consultation of those affected. Projects initiated by management were usually greeted less than enthusiastically by the work floor.

The management of the field service department had three reasons for starting a performance management program for its service technicians. Firstly, it could help maintain or improve the quality of service while reducing its cost, securing the competitive edge. Secondly, it would meet the technicians' recurrent request for valid and useful feedback about their performance (until then, performance feedback had consisted of one or two measures of repair quality, which were difficult to interpret because they did not take into account the differences between types of copiers). The third reason involved a possible future inclusion of performance information in the performance appraisal of the technicians. The management agreed to a participative program, hoping that it would lead to a high-quality system, that would be accepted by the employees.

The Time-Frame
The study was conducted in the early to mid 1990s.

Method

Research design
The research design used to test the effects of the interventions was a quasi-experimental design with control groups. First, the performance management system was participatively designed and implemented in two of the 14 service regions, with the other 12 regions serving as the control condition. After a baseline period and a period of feedback in these two regions, the system was introduced in a tell-and-sell manner in six of the control regions, while the other six regions remained in the control condition.

Development and implementation of the ProMES system

System development in the participation condition
The development of the ProMES system took 15 monthly meetings with both regions participating in system development, including one meeting to achieve consensus between the two regions on the
design of the system. Limited possibilities for horizontal communication combined with the size of the development teams necessitated the use of non-interactive information-gathering techniques (nominal group technique and Delphi technique) to sustain the approximately 20 hours of group discussion to reach consensus on the design of system components. Four of the meetings were review and approval meetings in which the design teams presented elements of the system (key result areas and indicators, contingencies, feedback report, final complete system) to the management and agreement was reached. After 21 months, an operational system was available. The ProMES system developed by the two regions in the participation condition consisted of four performance indicators covering two key result areas (see Table 1).

The feedback provided to the technicians consisted of two monthly feedback reports: one report covering a technician’s individual performance and one report covering the performance of his or her region as a whole. In addition, graphical feedback on performance trends covering up to 12 months was provided.

System implementation in the participation condition
Immediately after the system development was completed, the performance management system was implemented in the two regions that had developed the system. Because the technicians of the participation regions were well aware of the contents and purposes of the system developed by them, the implementation phase was started with no further activities than an invitation to use the feedback as a tool for performance improvement and to report experiences with and comments on the system. A reference manual was provided with detailed information on the system, as were feedback reports covering a technician’s performance in the 3 months prior to implementation.

System introduction and implementation in the tell-and-sell condition
Nine months after the start of the implementation phase in the participation condition, the system was introduced in the six regions that took part in the tell-and-sell condition. Through a standardized introduction meeting, the technicians of each of the six regions were provided with a basic introduction into the ProMES system that they were going to use, and they got an opportunity to ask questions (for

Table 1. Key result areas, performance measures, and importance weights

<table>
<thead>
<tr>
<th>Key result area</th>
<th>Performance indicator</th>
<th>Description</th>
<th>Weight of indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>Mean copies between calls</td>
<td>Average number of photocopies the client’s machine has produced between two consecutive service calls</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Percentage repeat calls</td>
<td>Percentage of calls that occur within five working days from the previous call on the same machine</td>
<td>70</td>
</tr>
<tr>
<td>Cost</td>
<td>Labor time per call</td>
<td>Average time spent per service call on maintenance and repair activities (minutes)</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Parts cost per call</td>
<td>Average amount of spare parts used per service call (monetary value)</td>
<td>50</td>
</tr>
</tbody>
</table>

Note: The relative importance of the indicators was agreed upon by technicians, supervisors, and upper management, based on (1) their estimates of changes in customer satisfaction of a comparable performance change on each of the four indicators and (2) an activity-based costing analysis, which resulted in estimates of the financial consequences of a comparable performance change on each of the four indicators. Consensus on the final weights was reached among the two regions’ technicians, supervisors, and upper management in a review and approval meeting. The composite measure of overall performance took into account that a technician’s workload may change from one month to another (more copiers of type A in one month, more copiers of type B in another month) and that technicians did not work on the same types of photocopiers (one technician may primarily work on type C, another technician on type D). This ensured comparability of performance across technicians.
further details see below). The same reference manual as above was provided to the technicians in the tell-and-sell condition, as were feedback reports covering a technician’s performance in the 3 months prior to the meeting.

Both experimental conditions

Parallel to the introduction of the system in the tell-and-sell condition, bilateral feedback meetings between the supervisor and his technicians were set up in both experimental conditions. These meetings were a response to the growing need of technicians in the participation condition for help to make still more effective use of the feedback provided by the ProMES system. Technicians needed support from their supervisors to use their feedback reports as problem-solving tools. To that end, a procedure for individual feedback sessions was developed and in order to convey to the supervisors the knowledge and skills to conduct effective bilateral feedback meetings with their technicians, a training program, based on behavior modeling principles (e.g., Goldstein & Sorcher, 1974; Latham & Saari, 1979; Latham & Wexley, 1981), was designed and carried out. The training program focused on a detailed explanation of the workings of the system, and centered on ways to effectively introduce the system to individual engineers and discuss their feedback reports. The categories of supervisor behaviors used as key learning points were:

- achieving technicians’ understanding and acceptance: ‘Explaining the objectives and details of the procedure’ and ‘Dealing with possible resistance’;
- setting technicians’ self-management in motion: ‘Analyzing feedback reports’ and ‘Looking for improvement areas’;
- general behaviors: ‘Discussion until consensus’ and ‘Maintaining a constructive atmosphere.’

As the above supervisor training and concomitant feedback sessions, if only provided to supervisors and technicians of the participation condition, would obviously have added difference between experimental conditions over and above the one examined in this study, the supervisor training and feedback sessions were also implemented in the tell-and-sell condition. In doing so, differences between experimental conditions were restricted to the main factor of concern, namely form of participation in system design.

Operationalization of variables

As the main dependent variable, performance data of individual technicians were used. In all three conditions (n = 182, all men) these data were collected from the feedback reports generated by the ProMES system. The overall ProMES performance index was used as the basis for evaluating employee performance in all three conditions. Since the technicians were grouped into 14 regions, we needed to determine whether the individual technician—in contrast to the region—would be the appropriate unit of analysis. Applying the procedures and guidelines recommended by Muthen and Satorra (1995) and Snijders and Bosker (1999) to the performance changes associated with implementation of the ProMES system in the participation and tell-and-sell condition, we found that both conditions met their criterion for using individual data, i.e., a design effect of 2 or less.

The independent variable, degree of participation, had three levels, namely participation, tell-and-sell, and control group. Participation as operationalized by us implied the following. First, a group of technicians, together with their supervisor, through a process of discussion until consensus generates definitions of the technicians’ result areas and performance indicators for the measurement of those results, indications of the relative importance of the performance indicators, and the basic elements of a feedback system through which the technicians will be informed on their performance on the
indicators. Secondly, the group (including its supervisor) reaches agreement, again through a process of discussion until consensus, on the above issues with the management responsible for the group. In both phases of the process, a facilitator takes care of a number of discussion rules (e.g., decisions have to be based on arguments, not on authority; performance indicators have to fulfill specific design requirements, the most important one being controllability).

Tell-and-sell as operationalized by us implied the following. A meeting was held, which included:

- an opening statement by the service manager, stressing the importance of performance improvement for the company and their support for the ProMES system as a tool for achieving this;
- an introduction into performance management (e.g., criteria for good indicators, feedback, and goals) and the ProMES method as used by the two development regions;
- an explanation of the performance management system as developed by colleagues from the two participation regions;
- an opportunity for questions and answers;
- an invitation to use the feedback as a tool for performance improvement and to report experiences with and comments on the system.

In the control group, performance was measured in the same way as in the participation and tell-and-sell groups. ProMES feedback was not provided.

Equating the conditions

Care was taken to obtain conditions that were equivalent on relevant variables. Retrospectively reconstructed regional performance data for the ProMES indicators developed during the study showed that the average pre-study performance of the participation condition (two regions) and control condition (12 regions) was the same. Furthermore, the tell-and-sell condition (six regions) and remaining control condition (six regions) were composed in such a way that they had the same overall ProMES score in the period before the start of the tell-and-sell implementation. The mean age of the technicians and their tenure were almost identical in all three conditions (Age—participation: 27.2 (SD = 4.1); tell-and-sell: 26.4 (SD = 4.0); control: 26.7 (SD = 4.2). Tenure—participation: 3.6 (SD = 2.8); tell-and-sell: 3.6 (SD = 3.2); control: 3.7 (SD = 3.2). All data refer to the first month of the baseline). Lastly, the ratio of technicians working in urban versus rural areas—with possibly different customer demands—was practically the same in all three conditions (participation: 48 per cent urban; tell-and-sell: 45 per cent urban; control: 44 per cent urban).

Additional measures

In the participation condition, the perceived amount of participation was assessed as a manipulation check with two items: ‘In the development of the ProMES system, the technicians’ opinions were sufficiently taken into account’ (five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree)) and ‘How much influence did the technicians have on the final ProMES system?’ (percentage from 0 to 100).

In the implementation of ProMES systems, feedback is the primary intervention employed to achieve performance improvement (e.g., Pritchard et al., 1988, 1989). We included two variables to measure the impact of our intervention with regard to feedback in the three conditions. ‘Amount of feedback’ assessed whether the treatments in the two experimental conditions actually had any significant impact on the technicians’ daily work (manipulation check). It is expected to be judged significantly higher in the experimental conditions compared to the control condition. ‘Usefulness of feedback’ was a critical variable used to explain performance differences among the three conditions.
Although formal goal-setting is only a secondary intervention in ProMES implementations (e.g., Pritchard, 1995a), and had only received limited attention in our supervisor training program, implicit or spontaneous goal-setting could have occurred as a result of the feedback meetings. Measures of goal clarity and goal difficulty were therefore included. Variables related to supervisor behaviors (‘Influence in goal-setting,’ ‘Achieving understanding and acceptance,’ ‘Feedback’) were employed as control variables to rule out alternative explanations (to participation in system design) for any performance differences found. Thus, at the end of the study, a questionnaire on feedback and goal-setting was administered in all three conditions. It contained the following seven variables: amount of feedback (manipulation check; 4 items; sample item: ‘I receive information about my performance’), usefulness of feedback (process variable; 5 items; sample item: ‘From the information I receive about my performance, I can easily gather how well I’m doing’), clarity of quality goals (process variable; 2 items; sample item: ‘Precise agreements are made about the level of quality I have to attain’), clarity of cost goals (process variable; 2 items; sample item: ‘Precise agreements are made about my use of spare parts’), influence in goal-setting (control variable; 3 items; sample item: ‘When agreements are made about my work performance, my opinion is taken into account’), goal difficulty (process variable; 4 items; sample item: ‘I think it is rather difficult to meet the requirements for use of spare parts’), knowledge of priorities (process variable; 4 items; sample item: ‘I know exactly which aspects of my work are very important and which are not so important’). For each item, a five-point Likert scale was used, ranging from 1 (almost never) to 5 (almost always). All items and scales were based on Algera and Van Tuijl (1990). A confirmatory factor analysis, using LISREL 8.53, yielded a reasonable fit for the predicted seven-factor model (RSMEA = 0.083, CFI = 0.92). Additionally, in the participation and tell-and-sell condition, a second questionnaire was used to measure the supervisor behaviors and the technicians’ satisfaction with the feedback meetings. The following scales were developed for the measurement of supervisor behaviors: achieving understanding and acceptance (control variable; 4 items; sample item: ‘My supervisor paid serious attention to my opinion about ProMES and any objections I had’), feedback (control variable; 4 items; sample item: ‘In discussing my feedback reports, my supervisor and I looked for causes of high scores and for causes of low scores’), satisfaction with the ProMES program (process variable; 2 items; sample item: ‘The ProMES meetings are a useful way of working on improving my performance’). For each item, a five-point Likert scale was used, ranging from 1 (strongly disagree) to 5 (strongly agree). Table 2 presents descriptive statistics and correlations for all variables.

Results

The presentation of the results follows the order of system implementation in the experiment. The results are summarized in Table 3.

First implementation phase: implementing the system in the regions that developed the system participatively (months 9–18)

Performance data for all individual technicians in the study were available (retrospectively) for the last 8 months of system development. These 8 months (months 1–8) were treated as the baseline period. The 10-month period of system implementation in the participation condition was associated with a significant increase of overall performance. The participation condition (n = 31) attained an average
Table 2. Additional measures: descriptive statistics, correlations, and reliabilities

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<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<tbody>
<tr>
<td>Amount of feedback</td>
<td>175</td>
<td>3.44</td>
<td>1.14</td>
<td>(0.91)</td>
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<tr>
<td>Usefulness of feedback</td>
<td>175</td>
<td>3.03</td>
<td>0.96</td>
<td>0.65**</td>
<td>(0.90)</td>
<td></td>
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<tr>
<td>Clarity of quality goals</td>
<td>175</td>
<td>3.58</td>
<td>0.71</td>
<td>0.00</td>
<td>0.21**</td>
<td>(0.78)</td>
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<tr>
<td>Clarity of cost goals</td>
<td>175</td>
<td>2.96</td>
<td>0.85</td>
<td>0.12</td>
<td>0.27**</td>
<td>0.48**</td>
<td>(0.74)</td>
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<tr>
<td>Goal difficulty</td>
<td>175</td>
<td>2.33</td>
<td>0.89</td>
<td>0.11</td>
<td>0.05</td>
<td>0.26**</td>
<td>0.31**</td>
<td>(0.87)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influence in goal-setting</td>
<td>175</td>
<td>3.39</td>
<td>0.84</td>
<td>0.16*</td>
<td>0.26**</td>
<td>0.34**</td>
<td>0.40**</td>
<td>0.21**</td>
<td>(0.77)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Knowledge of priorities</td>
<td>175</td>
<td>4.03</td>
<td>0.67</td>
<td>0.07</td>
<td>0.14</td>
<td>0.27**</td>
<td>0.29**</td>
<td>0.28**</td>
<td>0.26**</td>
<td>(0.77)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor behaviors</td>
<td>100</td>
<td>3.85</td>
<td>0.74</td>
<td>0.11</td>
<td>0.22*</td>
<td>0.21*</td>
<td>0.22*</td>
<td>0.06</td>
<td>0.42**</td>
<td>0.27**</td>
<td>(0.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>96</td>
<td>3.37</td>
<td>1.01</td>
<td>0.23</td>
<td>0.23</td>
<td>0.29*</td>
<td>0.25</td>
<td>0.00</td>
<td>0.30**</td>
<td>0.14</td>
<td>0.48**</td>
<td>(0.78)</td>
<td></td>
</tr>
<tr>
<td>Supervisor behaviors</td>
<td>56</td>
<td>3.37</td>
<td>1.01</td>
<td>0.23</td>
<td>0.23</td>
<td>0.29*</td>
<td>0.25</td>
<td>0.00</td>
<td>0.30**</td>
<td>0.14</td>
<td>0.48**</td>
<td>(0.78)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>3.26</td>
<td>0.91</td>
<td>0.29*</td>
<td>0.29**</td>
<td>0.06</td>
<td>0.26*</td>
<td>0.08</td>
<td>0.14</td>
<td>0.31**</td>
<td>0.15</td>
<td>0.45**</td>
<td>(0.73)</td>
</tr>
</tbody>
</table>

*Variables 1–7 were measured in all three conditions. Variables 8–10 were measured in the participation and tell-and-sell condition. Therefore, not all correlation coefficients are based on the same n. The diagonal contains the Cronbach α index of internal consistency.

*p < 0.05; **p < 0.01.
A 19-point increase in the ProMES effectiveness score compared to the control condition ($n = 151$) (see Figure 1). A 2 x 2 multivariate analysis of variance (MANOVA), in which the mean overall score from the baseline period and the feedback period are considered repeated measures, revealed a significant interaction effect ($F = 11.44, p < 0.001$). These results offer support for the first hypothesis: performance improved significantly after implementation of the participatively designed performance management system.

**Second implementation phase: implementing the system in the regions that got a tell-and-sell introduction into the system developed by the participation regions (months 19–27)**

The 9-month period of system implementation in the tell-and-sell condition ($n = 80$) resulted in a 12-point increase of the overall ProMES effectiveness score compared to the control condition ($n = 71$), as shown in Figure 2. A 2 x 2 multivariate analysis of variance (MANOVA), in which the mean overall

<table>
<thead>
<tr>
<th>Table 3. Performance changes in the participation condition and the tell-and-sell condition relative to control condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>First implementation phase (months 9–18)</td>
</tr>
<tr>
<td>Participation (n = 31)</td>
</tr>
<tr>
<td>Tell-and-sell (Baseline) (n = 80)</td>
</tr>
</tbody>
</table>

*aSupports Hypothesis 1: performance improved after implementation of the performance management system in the participation condition.

*bSupports Hypothesis 2: performance improved after implementation of the performance management system in the tell-and-sell condition.

*cSupports Hypothesis 3: implementation of the performance management system was associated with a larger performance improvement in the participation condition, compared to the tell-and-sell implementation.

Figure 1. Effects of implementing ProMES in the participation condition (months 9–18). The vertical axis represents the average monthly overall effectiveness value obtained in the two conditions.
score from the baseline period (months 9–18) and the feedback period (months 19–27) are considered repeated measures, showed that this increase was significant ($F = 5.81, p < 0.05$).

These results support the second hypothesis: performance improved significantly after implementation of the performance management system that was introduced in a tell-and-sell manner.

Second implementation phase: continuation of feedback in the regions that developed the system participatively (months 19–27)

Adding the bilateral feedback meetings to the existing feedback in the participation condition ($n = 31$) resulted in an additional eight-point increase compared to the control condition ($n = 71$), also shown in Figure 2. This increase was not significant ($F = 1.49$, n.s.). The mean overall increase (months 9–27) in the participation condition ($n = 31$) relative to the control condition ($n = 71$) amounted to 26 points. A $2 \times 2$ MANOVA, in which the mean overall score from the baseline period (months 1–8) and the feedback period (months 9–27) are considered repeated measures, revealed that this increase was significant ($F = 19.47, p < 0.001$). These results also support the first hypothesis: performance improved significantly after implementation of the participatively designed performance management system.

Second implementation phase: comparing the effects of system implementation in the participation and tell-and-sell regions

The overall effects in the participation and tell-and-sell condition were compared as follows. First, the mean overall baseline score relative to the mean control group score was calculated for the participation and tell-and-sell condition. Analogously, for both groups the mean overall score in the feedback period relative to the mean control group score was calculated (for the participation groups the
feedback period covered months 9–27, for the tell-and-sell group the feedback period covered months 19–27). A $2 \times 2$ MANOVA, in which these baseline and feedback scores (relative to the control group) are considered repeated measures for the participation and tell-and-sell group, produced a significant interaction effect ($F = 4.65, p < 0.05$). This result supports the third hypothesis: implementation of a participatively designed performance management system was associated with a larger performance improvement in the regions that developed the system, compared to the regions in which the same system was implemented after a tell-and-sell introduction.

**Additional measures**

With regard to participation in system development, the technicians in the participation condition agreed with the statement that their opinion had been sufficiently taken into account (4.3 on a five-point Likert scale). Also, on average they reported a 69 per cent (SD = 16 per cent) influence on the contents of the system. These results confirm that these technicians were allowed (and exerted) a high degree of influence on the final system.

In Table 4, the results of ANOVA and post hoc tests of differences are shown for the variables related to feedback and goals that were measured in all three conditions.

As would be expected, the technicians in the participation and tell-and-sell condition reported a significantly higher amount of feedback than their colleagues in the control condition ($t(94) = 11.00, p < 0.001$, and $t(144) = 11.62, p < 0.001$, respectively). The three conditions differed significantly with regard to perceived usefulness of feedback. Both in the participation and in the tell-and-sell condition, perceived usefulness of feedback was higher than in the control condition ($t(94) = 7.08, p < 0.001$, and $t(144) = 4.84, p < 0.001$, respectively). Participants in the participation condition considered the feedback significantly more useful than those in the tell-and-sell condition ($t(106) = 2.58, p < 0.05$). The only other significant result was a higher perceived goal difficulty in the tell-and-sell condition compared to the control condition ($t(144) = 3.53, p < 0.001$). The three conditions did not differ significantly with regard to ratings of clarity of quality goals, clarity of cost goals, influence in goal-setting, and knowledge of priorities.

Table 4. Additional measures: results of one-way analysis of variance, comparing the participation, tell-and-sell, and control condition

<table>
<thead>
<tr>
<th>Condition:</th>
<th>Amount of feedback&lt;sub&gt;h,c&lt;/sub&gt;</th>
<th>Usefulness of feedback&lt;sup&gt;a,b,c&lt;/sup&gt;</th>
<th>Clarity of quality goals</th>
<th>Clarity of cost goals</th>
<th>Goal difficulty&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Influence on goal-setting</th>
<th>Knowledge of priorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>n = 29 (94%)</td>
<td>4.23 (0.61)</td>
<td>3.71 (0.63)</td>
<td>3.50 (0.64)</td>
<td>2.84 (0.75)</td>
<td>2.31 (0.84)</td>
<td>3.93 (0.84)</td>
</tr>
<tr>
<td>Tell-and-sell</td>
<td>n = 79 (99%)</td>
<td>4.01 (0.86)</td>
<td>3.22 (0.95)</td>
<td>3.49 (0.80)</td>
<td>2.87 (0.99)</td>
<td>2.57 (0.97)</td>
<td>3.39 (83)</td>
</tr>
<tr>
<td>Control</td>
<td>n = 67 (94%)</td>
<td>2.41 (0.80)</td>
<td>2.51 (0.82)</td>
<td>3.72 (0.59)</td>
<td>3.13 (0.67)</td>
<td>2.06 (0.73)</td>
<td>3.45 (0.84)</td>
</tr>
<tr>
<td>ANOVA</td>
<td>F(2, 172)</td>
<td>90.3**</td>
<td>23.9**</td>
<td>2.3</td>
<td>2.0</td>
<td>6.3*</td>
<td>0.6</td>
</tr>
</tbody>
</table>

<sup>a</sup>Multiple comparison (Scheffé) tests yielded statistically significant differences ($p < 0.05$) for the participation and the tell-and-sell condition.

<sup>b</sup>Multiple comparison (Scheffé) tests yielded statistically significant differences ($p < 0.001$) for the participation and the control condition.

<sup>c</sup>Multiple comparison (Scheffé) tests yielded statistically significant differences ($p < 0.001$) for the tell-and-sell and the control condition.

*p < 0.05; **p < 0.001.
The supervisors in both conditions implemented the key behaviors for both ‘Achieving understanding and acceptance’ and ‘Feedback’ to a reasonable degree. There was no significant difference between the participation and the tell-and-sell condition for these variables ($t$ (98) = 1.58, n.s. and $t$ (98) = 0.42, n.s., respectively), which suggests that performance differences between the participation and tell-and-sell condition were not caused by differences in the effectiveness of supervisor behaviors (if the performance effects had been due to differential supervisor behaviors, these should have been significantly higher in the participation condition). Satisfaction with the ProMES program was significantly higher in the participation condition compared to the tell-and-sell condition ($t$ (98) = 2.41, $p < 0.05$).

Discussion

This study has shown that implementing a participatively designed performance management system can lead to a significantly larger performance increase, compared to the performance increase that follows the tell-and-sell introduction of an identical system. In addition, in both experimental conditions a significant performance increase compared to the control condition has been demonstrated. Thus, all three hypotheses have been confirmed, thereby providing compelling evidence for our main tenet that participation can make a difference compared to tell-and-sell, depending on the circumstances (e.g., the importance of the issue and the kind of setting). The effect sizes found further sustain this position. We compared the effect sizes in the participation and tell-and-sell condition with those found by Wagner (1994) in his meta-analysis of participation studies. To calculate the effect sizes for our study, we entered the $F$-values from Table 3 into the equations provided by Hunter and Schmidt (1990) and Rosenthal (1991). This resulted in $d = 0.96$ for the participation condition and $d = 0.39$ for the tell-and-sell condition. Wagner (1994) reported correlations between $r = 0.15$ and $r = 0.25$ between participation and performance (excluding percept–percept correlations), which is equivalent to effect sizes between $d = 0.30$ and $d = 0.48$ (cf. Rosenthal, 1991). Thus, the participation effect size in our study clearly exceeds the upper limit of the range of effect sizes reported by Wagner (1994), while the tell-and-sell effect size lies within that range. This at least demonstrates that the impact of participation...
when it comes to issues and settings as investigated in our study might be much larger than suggested by researchers who are skeptical with regard to the added value of participation (see, for example, Locke & Schweiger, 1979; Schweiger & Leana, 1986; Wagner, 1994).

With respect to the cognitive and motivational mechanisms mentioned in the introduction, we would like to further speculate on the causes of the performance difference found between the participative condition and the tell-and-sell condition. A closer examination of the performance effects in both conditions revealed that feedback in the participation condition led to improved overall performance mainly through improvements on the cost indicators (Quality +7, Cost +19, Overall +26), while in the tell-and-sell condition improvement on the quality indicators contributed most to overall performance increase (Quality +10, Cost +2, Overall +12). Thus, while both conditions improved almost equally in terms of quality performance, the participative condition in addition improved considerably in terms of cost performance, whereas the tell-and-sell condition hardly improved on cost at all. It should be noted that before the start of the project a generally held belief among service technicians was that ‘a good technician is one who attains high quality.’ The discussions with management during system development in the participative condition brought to light that cost performance was almost equally important for the company as quality performance. Therefore, one may conclude that the performance feedback in the tell-and-sell condition had its effect through building forth on the long-held belief in the importance of quality. In the participation condition, on the other hand, this long-held belief was effectively challenged during the discussions and changed into a more balanced approach to quality and cost performance. Thus, a plausible explanation is that the technicians in the participation condition had become committed to the priorities that they—in agreement with the management—had established, whereas the tell-and-sell intervention was not powerful enough to effectively challenge the long-held belief among service technicians that ‘a good technician goes for quality.’ In this case, participation appears to have had an important motivational effect, through the willingness to allocate effort to cost aspects of the task. This explanation is supported by the results on two of the additional measures, which were in line with our predictions. Whereas the perceived amount of feedback was the same in the participation and tell-and-sell condition (both significantly higher than the control condition), the usefulness of the feedback was judged significantly higher in the participation condition. Also, the usefulness of the bilateral feedback meetings for attaining performance improvement was rated significantly higher in the participation condition. Apparently, acceptance of the feedback on both quality and cost performance, as well as acceptance of attempts by the organization to stimulate optimization of overall performance through joint optimization of both quality and cost performance, was higher in the participation condition than in the tell-and-sell condition. Technicians in the participation condition will more likely have followed through on these priorities (and the apparent opportunities for improvements on cost indicators) and, thus, have attained a larger overall performance increase. Alternative explanations involving differences in the effectiveness of supervisor behaviors and/or perceived influence in goal-setting are less likely since the participation and tell-and-sell condition did not differ on any of these measures.

We had expected to find differences between the experimental conditions and the control condition on the measures of clarity of goals, influence in goal-setting, and knowledge of priorities. There are several possible explanations for the absence of differences on these variables. First, one should realize that the main characteristic of a ProMES system is that it provides feedback. It can be used as a goal-setting system too, but this has in most of the cases known to us only been done after a longer period of use as a feedback system. In the present study (notwithstanding the presence of a goal-setting module in the training program that was provided), setting specific and challenging goals played a negligible role. This may explain why participants in the three conditions did not react differently with regard to the questionnaire items on goals. A second explanation might be that participants in different conditions were using different frames of reference in interpreting questionnaire items (cf. Golembiewski,
Billingsley, & Yeager, 1976). For example, it became apparent that ‘clarity of cost goals’ had been interpreted by some technicians in the control condition as the degree to which the maintenance procedure guidelines for spare part replacement and time expenditure were clear, whereas the technicians in the experimental conditions mainly referred to agreements with regard to the operationalization of the cost indicators.

One final comparison between the participation condition and the tell-and-sell condition may be of interest. We found a higher perceived goal difficulty in the tell-and-sell condition combined with no difference on the knowledge of priorities measure. Taking into account the limited role of explicit goal-setting, this perhaps indicates that at least some of those in the tell-and-sell condition—although aware of what was expected—were less certain how to fulfill these expectations. A tentative explanation may be that cognitive benefits with regard to effective task strategies ensued from participatively developing the components of the ProMES system.

**Limitations**

In this field study, we were able to employ a relatively strong research design: quasi-experimental with control groups. The groups were equated on several characteristics considered relevant, such as pre-intervention performance. Furthermore, the results for the additional measures show that the different effects of participation and tell-and-sell on performance cannot be explained by differences in the amount of feedback or differences with regard to supervisor behaviors. Nevertheless, the study has some limitations, which need to be mentioned. In the introduction, we have argued that the form of participation we addressed can only be studied in a real-life organizational environment with its inherent complexity. Even though we employed a quasi-experimental design and made every effort possible to eliminate threats to internal validity, incomplete control of the research environment precludes ruling out all possible rival explanations. Nevertheless, we feel confident that we have countered most threats to the internal validity of the study. The fact that the conditions were equal with respect to pre-intervention performance as well as on other variables will have contributed to prevent testing, statistical regression, history, and differential selection effects from occurring. The maturation threat was countered through the use of a control condition. Also, the use of identical performance measures in all conditions during the entire study practically ruled out instrumentation as an alternative explanation for our results. Furthermore, experimental mortality could be ruled out since turnover was very low (e.g., only seven technicians were excluded from the study because they left the company during the feedback phase). However, other threats cannot be ruled out completely, although it is not likely that they played a significant role. For example, it is conceivable that some participants in the study might have tried to ‘look good in the figures’ by manipulating the measures. In our study, the data on which the performance measures were based were reported by the technicians themselves (e.g., copy counters, spare parts used). However, the objective nature of the performance measures plus the fact that incorrect data supplied by a technician would most likely have been spotted by a colleague, his supervisor, or by anyone performing checks and balances on available data, would render systematic fraud unlikely (which would then present a testing threat if it occurred to a different degree in the three conditions). A multiple treatment inference threat might have occurred if, for example, the participation regions had been chosen based on experiment proneness or on a favorable leadership style of the supervisors. Since this was not the case, occurrence of this threat is unlikely. Spill-over effects cannot be completely discounted. However, because of the geographically dispersed regions, communication between technicians from different regions was limited. We also have no indications that the lack of opportunity to participate in system development caused negative feelings or reduced motivation in the tell-and-sell or control condition.
Because of certain restrictions in the company due to which the supervisor training program had to be postponed, the bilateral feedback meetings in the participation condition had to be preceded by several months of feedback ‘through the mail’ (without feedback meetings). The feedback phase in the tell-and-sell condition immediately started with the bilateral feedback meetings. Thus, in this respect, the implementations in both experimental conditions were not completely identical. However, since we used the mean performance increase to evaluate performance differences between the two conditions, this difference in implementation would have run counter to our first and third hypotheses, since it would have diminished the mean effect in the participation condition.

Our choice to use a tell-and-sell strategy in the non-participative condition and no ‘tell’ strategy might be seen as a limitation, although of a different kind than those above. Our choice reflects the view that it is indeed a tell-and-sell strategy rather than a ‘tell’ strategy that should be investigated as an alternative to participation in modern organizations. The real-life field situations that are the frame of reference for the form of participation studied here are characterized by complex, meaningful decisions within an organizational context, which have long-term consequences for employees. Here, understanding and acceptance of the decision (and its consequences) by employees is a major issue. Whereas it would be logical for a laboratory study (voluntary, short-term, context-free, concerning an issue that is not very meaningful to the participants, once outside the laboratory) to incorporate a ‘tell’ condition, this is hardly feasible in field studies such as the one we have conducted. We think that it will be hard to find line managers or human resource managers who would allow a ‘tell’ condition to be incorporated in any meaningful performance management study within their company.

Implications and future research

This study has demonstrated that participation in the design of performance management systems can be associated with unusually large increases in performance. The results of this study also imply that the widespread view that a tell-and-sell persuasion strategy may serve as a substitute for participation (e.g., Latham, Erez, & Locke, 1988; Sagie, 1994) might not apply to certain forms of participation in field settings. Our study indicates that participation which is formal, direct, long-term, and applied to all stages of a complex and meaningful decision within a real-life organizational setting may be preferable to a tell-and-sell strategy. Future research could focus on determining which of these aspects are—individually or in conjunction—responsible for the superiority of participation over tell-and-sell.

In the introduction, we touched upon mechanisms that may explain the difference in performance increase associated with participation versus tell-and-sell in the design and implementation of a performance management system. In our study, we mainly focused on performance, the outcome variable. Future research could add to our understanding by focusing on process variables, such as the cognitive and motivational mechanisms through which participation and tell-and-sell are supposed to affect performance.

This study also has implications for practitioners in the field of performance management. When developing and implementing a performance management system as it was done in this study, one may expect it to be less successful in the tell-and-sell units. Since having a full participation procedure in each and every unit is hardly feasible, one would either have to accept this or employ a different procedure, such as having representatives from each unit participate in all stages of system development or having each unit participate in developing some part of the system (e.g., a key result area or an indicator). Field studies comparing these approaches would contribute to our understanding of the effects of different degrees of participation or different approaches to participation.
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References


