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Some research questions in connection with
R.D. Pritchard's Productivity Measurement and
Enhancement System (PROMES)

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Some research questions in connection with R.D. Pritchard's Productivity Measurement and Enhancement system (PROMES)

1. Questions with regard to the PROMES-system

The following questions mainly concern the conditions that should be fulfilled in order to further successful implementation of PROMES.

1.1. Knowledge and skills of participants

The question is if the development of products, indicators etc. can be done without a clear insight of job incumbents in their responsibilities and in the working methods (procedures etc.) they should follow. If there is incomplete understanding, there is a danger that a system will be developed that stimulates the job incumbents to strive after the wrong objectives or to follow faulty procedures. In addition, some minimum of skills in generating and discussing ideas as a group should presumably be present. The same questions can be asked with regard to the investigators working with the groups. How much insight in the products and processes of the groups they coach do they have to dispose of in order to be successful, and how skillful should they be in guiding group problem solving processes?

1.2. Organization structure

Is a well defined structure (i.a. groups, departments etc. with well-defined tasks and clearly circumscribed authorities) a necessary condition? In other words, PROMES has proven to be successful in a 'machine-burocracy' like setting (US Air Force); could it work e.g. in an 'adhocracy' too? Does installing PROMES make the organization less flexible in the end, or, put it the other way around, is some degree of stability or rigidity a precondition for PROMES? How much stability (rigidity) is required? Would it be wise to start PROMES in a period of rapid growth or major changes?

1.3. Information infrastructure

PROMES requires that a lot of information is gathered on the performance of groups.

Is it possible to formulate minimum requirements as to the information infrastructure of firms which are candidate for a PROMES project (e.g. computerized information system etc.)?

1.4. Willingness of participants to let performance information be registered and discussed

There are at least two questions here. First, because the initiative to start a PROMES project will mostly come from management but the project itself has to start bottom-up, a careful introduction of the project at the work floor will be necessary. Which points are essential here in order to assess whether a sound basis for cooperation is present? Secondly, if there appears to be some reluctance at the workflow, can specific measures be advised to gain trust? In particular, one might have problems with the very essence of PROMES, viz. making performance visible. Fear of negative consequences (e.g. the use of performance information in a disciplinary way) might inhibit valid (self-)registration of performance information.

1.5. Room for improvement

The purpose of PROMES is to improve productivity. Although in the US Air Force study the scale of the effectiveness measure is not completely clear, productivity appears to increase dramatically. Was it known before that this huge improvement would be possible in principle and if so, how was room for improvement assessed? Was there agreement among participants that performance could be improved (not necessarily by working harder, but preferably by working more efficiently)?

1.6. Status quo as point of departure

Somewhat related to (1.2.), the question is whether one should accept the status quo as given and start with developing products, indicators and so on for the situation at hand, or start with a diagnosis on the basis of which a number of structural changes could be implemented first? Structural changes could mean anything: improvement of inadequate lay-out, working methods, production planning methods, materials management procedures and so on.

Because of the fact that the particular indicators one chooses might depend on the design of work, organization and control systems, it could appear that productivity would likely improve more from structural changes followed by implementation of PROMES than from PROMES, followed by structural changes and again PROMES (the second one consisting of a different set of indicators).

1.7. Contribution of management

This point is related to 1.4. In addition to the problem of how to assess group members' trust of and willingness to participate in the PROMES project, There is a comparable question with regard to management. Are there particular requirements that have to be taken into account?

1.8. PROMES and interdependence

PROMES puts a heavy emphasis on control: (p. 341 JAP) "Productivity must focus on the things that the personnel in the unit or organization can control". At the same time it is concluded that (p. 341) "productivity includes the idea of a complex network of interrelationships at the intragroup, intergroup, and even interorganizational levels". From the description of the US Air Force study one gets the impression that indicators influenced by more than one unit are systematically left out of consideration, so that each unit arrives at a set of indicators which it can completely control. Because this is done for every unit and because the productivity of a branch is determined by combining unit productivities, the question arises whether (potentially vital) interdependences are systematically left out from the PROMES system.

1.9. PROMES' output orientation

PROMES seems to be heavily output oriented. As such it contrasts with Latham & Wexley (1981) who favor a behavior-oriented approach and with Locke and Latham (1984) who provide for both possibilities (goals can be expressed in terms of outcomes as well as behaviors). Doesn't the output orientation of PROMES confine its applicability by definition to situations in which outcomes can be clearly specified? Can PROMES be extended to incorporate products defined in behavioral terms?

1.10. The number of indicators per product

The relative contribution of a product to overall effectiveness seems to be related to the number of indicators developed for that product. The more indicators, the higher the impact.

Does the scaling relative to + 100 compensate sufficiently for this effect?

2. Questions for future research

Hereafter, several questions are summarized which will keep us moving in the forthcoming period.

2.1. Interdependence

Essentially, we start from the assumption that in modern organizations individuals, groups and departments are becoming increasingly interdependent. In order to do one's job, cooperation with others is of vital importance. Environmental conditions play an important role too. If targets are not met, sometimes (often?) others may be rightfully blamed. If services, supplies, raw materials etc. are not delivered in time or if they are of variable or questionable quality, a group's production rate and/or output quality may be negatively influenced. It may often be the case that a group did a great job, given the circumstances, but receives performance feedback from which one would conclude that, compared with a prior period with more favourable conditions, performance decreased. This might be true e.g. for a production planner who, in order to succeed in filling (loading) capacities evenly, is heavily dependent on the number and kind of orders he gets. The central question which arises from these examples is "how can interdependence be taken into account in feeding back performance information?" There seem to be several approaches in tackling this issue:

1. Reducing dependence (Green & Welsh, 1988); this approach is not very satisfying because it implies avoidance of the issue by choosing new goals, thereby eliminating the original dependence.
2. Restructuring dependence (Green & Welsh, 1988); this approach is not very satisfying either because it solves the problem artificially e.g. by exchanging an unreliable supplier for a more reliable one or by eliminating sequential dependence by installing buffers.

3. Isolating the controllable and leaving out what is not completely controllable or difficult to define (Pritchard, 1988; Anderson, 1988). Pritchard's approach runs the risk of decreased attention for products resulting from common efforts of two or more separate units. Anderson's version of this approach (known from an application in the realm of sports) implies a concentration on individual behavior (in this case 'legal body-checking') which is conditional to team success without making explicit the behavior (cooperation between team members) that actually leads to success.
4. Co-responsibility (Brethower, 1982). The approach is best described by referring to Brethower's example. Sales and production are mutually interdependent; in order to stimulate cooperation both departments were made co-responsible for some outcomes (e.g. percentage plant capacity used, growth rate); in addition, each department has its individual responsibilities too, of course.

It would be worthwhile to make a list of different kinds of interdependence that may be discerned and to think about ways to deal with each kind appropriately.

It might, in a particular case, be possible to define products at the interface between units (either in terms of outcomes or in terms of behavior). In other instances, one of the approaches described above might be the best option.

A different question concerns the type of goals to be set in various dependence situations. Analogous to the results of Hirst (1988) in a study in which intrinsic motivation was the dependent variable, an interaction might be found between goal type (general vs. specific) and interdependence (pooled vs. reciprocal) on performance measures too.

2.2. Complexity and uncertainty

The same kind of questions raised under 2.1 come to mind when complexity and uncertainty are at issue. In case of complex jobs performance on one task may be dependent on that on another one (e.g. quality-quantity trade off). This effect might be taken into account already by PROMES' 'contingencies'. In case of uncertainty (take e.g. jobs in a R&D department), the issue of controllability of results is again at stake, although in a different way compared with 2.1.

Now it is not others who partly influence outcomes but the inability of the researcher or the research team to fully control their own thought (research) processes aimed at finding solutions for sometimes only vaguely circumscribed questions.

The issue of specific vs. general goals comes up here too, and the question of which kind of feedback will be more effective (output- or behavior-oriented) also seems to be relevant with regard to uncertainty.

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