

Priority setting and evaluation as tools for planning research strategy

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The public and private sponsors and the clients and customers of research are, to a growing extent, interested in seeing high quality, effectiveness, and concrete impact of research efforts (1). This interest has pressed many institutions of applied research to sharpen their strategic planning. The Finnish Institute of Occupational Health has carried out research programming and planning since the early 1970s. Over the years, a certain evolution in such a strategy can be seen. At the beginning of the 1970s efforts were made to improve the operational output of research. The main emphasis was placed on maximizing the quality and quantity of research output of any kind. The strategy was very successful, and productivity increased remarkably. After the early 1980s a growing interest towards the effectiveness of research activities led to an assessment of the relevance of research programs. By the beginning of the 1990s, emphasis had shifted to examining the practical and societal impact of research directed towards the most important problems of occupational health and safety (1).

The process of strategic planning is a part of managerial practice, and, as such, it is a continuous activity in which the following steps can be recognized (2):

1. Analysis of the future trends of worklife.
2. Analysis of the trends in occupational health and safety problems.
3. Situation analyses.
4. Identification of new needs.
5. Identification of needs for change.
6. Setting of priorities.
7. Publicizing and "selling" the strategy to the departments and collaborative partners.
8. Calling for proposals for action programs.
9. Implementation of action programs.
10. Evaluation.

Setting of priorities

The most difficult question in institutional research policy is the selection of priorities. Numerous methods for priority setting have been described in the research policy literature (3). The Finnish Institute of Occupational Health has applied two different approaches in such priority setting: (i) prioritization of problems to

be solved by the research strategy and (ii) assessment of the relevance of the research projects or programs.

Priority problems have traditionally been identified by examining various dimensions of the different optional problem areas, for example, intensity, volume, distribution, future trends, sensitivity, and economic aspects of the issues concerned (table 1) (4).

Such priority setting is sensitive to problems that are recognizable at present or to problems that have already made a visible impact on occupational health and safety. The method, however, pays little attention to problems of the future and to problems with a totally new character (4). The lesson from such prioritization is that certain space should also be given to basic research to ensure maximal new innovations.

In spite of differences in the methods for priority setting the list of priorities at the end of the 1980s was

Table 1. Criteria for identifying priority problems in occupational health (2).

	Criteria
Severity of the problem	High mortality rate High permanent work disability rate High work absenteeism rate High morbidity rate Injuries to progeny Causes permanent annoyance at work Threatens job satisfaction and workers' well-being Disturbs production
Frequency of occurrence	Involves all workers Involves the majority of workers Focuses intensively on small high-risk groups Always present Occasionally present
Distribution of the problem	Nationwide Regional Local Limited to specific tasks or steps in the work
Trends in the development of the problem	Occurrence increasing/decreasing Intensity increasing/decreasing External pressures to solve the problem
Sensitivity of the problem	Can the problem be solved with available measures and methods? Is the problem manageable with available resources? Does the problem need research at all?
Economic aspects	Costs of the research project itself Overall investment needed in the solution Costs of the problem if left unsolved Cost-efficiency of solutions Cost-effectiveness of solutions Cost-benefit of solutions

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surprisingly similar in four industrialized countries (2) (table 2).

Assessment of relevance

The assessment of relevance deals with the examination of research strategy for its capacity to solve priority problems. Relevance can be assessed from at least three points of view, scientific, practical and societal (2), all of which are important for strategy design and particularly for attaining the ultimate impact of strategy (table 3).

Table 2. Priorities in occupational health research in four industrialized countries. (USA/NIOSH = United States/National Institute for Occupational Safety and Health, + = priority, - = not a priority)

	Denmark	Finland	Sweden	USA/NIOSH
Occupational respiratory diseases	+	- ^a	+	+
Occupational cancer	+	+	+	+
Reproductive disorders	+	+	+	+
Cardiovascular disorders	+	+	-	+
Musculoskeletal diseases and injuries	+	+	+	+
Dermatological disorders	+	- ^a	+	+
Neurotoxic disorders	+	-	-	+
Noise-induced hearing loss	+	+	-	+
Psychological stress and disorders	+	+	+	+
Electromagnetic waves	-	-	+	-
Problems of aging workers	-	+	+	-
Problems of young workers	-	-	+	-
Chemical and microbiological hazards	-	-	+	+
Occupational allergies	-	+	-	-
Problems of health service workers	-	-	+	-
Traumatic injuries	+	+	+	+
Computers and other new technologies	-	+	+	-

^a Respiratory and dermal allergies considered in the priority category "occupational allergies."

In the process of prioritization one is interested in ensuring that the target of research is an important one, whereas the purpose of relevance assessment is to ensure that the strategy is powerful in problem solving.

Evaluation of research

The objective of evaluation is to examine the "goodness" of the research program before its establishment, during the course of implementation, or, most often, after the termination of the program (5). The ultimate purpose of evaluation is to stimulate the improvement of research infrastructures, strategies, or programs and particularly to guide the allocation of research resources to optimal programs. Evaluation is understood to be a part of the normal managerial process and should be included in any research program (6). Depending on the context and purpose of evaluation, the approach can be a descriptive, comparative, economic, or effectiveness-impact evaluation. The ques-

Table 3. Criteria for assessing three various aspects of relevance (2).

	Criteria
Scientific relevance	Logic of the paradigm Clarity and logic of the hypotheses Impact on new knowledge Effectiveness, validity, and reliability of methods Self-criticism and putting results into perspective Quality of reporting, inference, and conclusions
Practical relevance	Problem-solving capacity Feasibility Cost-effectiveness Short- and long-term consequences
Societal relevance	Credibility Acceptability Societal consequences Desirability Timing

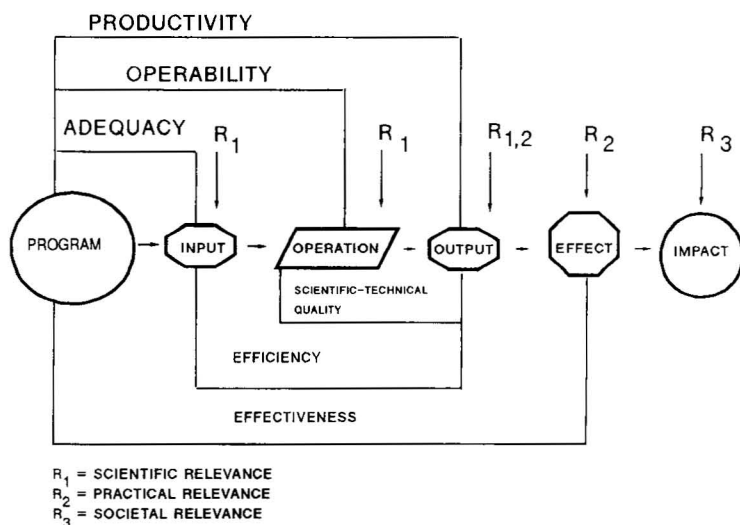


Figure 1. General outline of research evaluation.

tions to be considered with the help of evaluation are, among others, the following (2):

- Have the preset goals been achieved?
- What are the causes of success/failure?
- What modifications are needed?
- How can the goals be achieved?
- How can the goals be achieved with minimum costs?
- How can maximum research results be achieved with given costs?
- Has the program resulted in a decrease in the occurrence of risk factors and exposures or alterations in risk behavior?
- Has the program resulted in improvement in the health status of the target group?

The evaluation procedure used by the Finnish Institute of Occupational Health is given in figure 1. Although several pitfalls and problems are to be considered in such an evaluation, it has been found to be a useful tool for both the research unit concerned and for those who allocate resources for research (7). The evaluation projects carried out so far have also stimulated self-evaluation among research groups and individual researchers (8). Another evaluation approach employed by the Institute has been an interview study of clients and collaborative partners of the Institute, such as managers, safety committees, labor inspectors, occupational health units, occupational health and safety authorities, and vocational teachers (9).

Summary

The growing role of research as a factor for socioeconomic development has also stimulated efforts for setting priorities and for evaluating research strategies. Priorities can be set for problems which are known for their consequences or their existing characteristics. The only way to ensure research on new problems is to al-

low more space for basic research aimed at revealing new data and at describing new phenomena. Evaluation methods for applied research are available, and they have been successfully used for making research units more effective and for improving the quality of the research in question.

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