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AN OVERVIEW OF RESEARCH MANAGEMENT
IN ASIA



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I have yet to find a valid excuse for being chosen by Mr. Drilon to speak on a topic in which almost anyone of you can claim more expertise than myself. I am neither an agricultural scientist nor a manager of agriculture research. By profession, I am a student of politics and administration and my avocation is to understand the process of development from human and organizational viewpoints. When I was first informed of this assignment, my instant reaction was to refuse. But instead of acting on the instant impulse, I pondered and found two reasons for accepting the offer. First, since I had prepared a note on the management problems in research organizations for which Mr. Drilon may have considered me an expert, I thought it would give me a chance to share the note with you. Second, and this is more important, I thought this would give me an opportunity to share with you what I have learned during seven years work in the Rural Development Academy, Comilla, Bangladesh. I am sure that much of what I am going to say will be very familiar to you and the discussions that you may find most profitable would possibly come in the later part of the workshop when specific action programmes would be devised to cope with the problems of research management. The only consolation that I can offer you for bearing with me for the remainder of the hour is that you may witness first hand how a non-agricultural expert looks at agricultural problems (of course, I must tell you in confidence that in the part of the world I come from, everyone is an agriculture expert and more often than not it is the non-agricultural expert, particularly the generalist civil servants, who have had decisive influence in the shaping and management of agricultural policies and programmes).

The spirit of "Eureka" generated by the new agricultural technology, popularly known as Green Revolution, is now fading in the face of acute food shortages in many developing countries. Several countries of Asia that confidently looked forward to food self-sufficiency in late sixties are now busy in avoiding the threat of famine. India is facing an acute food shortage; the Filipinos are urged to eat a "bowl of rice" instead of their usual plateful. The current prospects for producing necessary food to feed their people are admittedly bleak in most Asian countries. Evidently those who thought that "miracle rice" had provided the key to food sufficiency and hence they should

now be concerned with second-generation problems proved less prophetic than those who advocated caution and even pessimism in handling this baffling issue of agricultural growth. Agricultural modernization has not been a one-shot affair. As the early developmentalists learned that mere injection of capital and expertise could not bring economic growth, so the agricultural experts are now realizing that importation of new agricultural technology is not adequate to agricultural modernization. For, to generate and sustain growth in any sphere, it seems that a reasonably wide base of local knowledge and capacity has to be developed and the role of research in building such base in the field of agriculture is very significant indeed.

RESEARCH EXPERIENCE

It would be inappropriate to say that developing countries do not have sufficient research experience in the field of agriculture. Records will show that in many countries of Asia, agricultural research has been very old, as old as similar efforts in the U.K. or the U.S.A. The well known Agricultural College and Research Institute, Coimbatore, India, was started as a model farm at Saidepat, Madras in 1868. The State Botanical Garden ('s Lands Plantentuin), the pioneer among the institutes of agricultural research in Indonesia, was established in 1817 and the first comprehensive agricultural research organization was created in the establishment of a department simply called Economic Garden (cultuurtuin) in 1876. The Rubber Research Institute of Malaysia which played a key role in enhancing the quality and productivity of the Malaysian rubber was established in 1925. But most of these research efforts in Asia were directed towards improving export crops (e.g. rubber, jute, cotton, etc.) and were mostly dependent on foreign technicians and resources. Although many of these research organizations have made significant contribution to the improvement of the specific crops for which they were designed, they suffered from two basic weaknesses. They were geared to the economy of European colonizers, and only indirectly helped the colonial populace; they developed little in the way of a self-sustaining body of local expertise.

With the attainment of independence, these countries in Asia began to have a comprehensive look in the agricultural field and usually following the recommendations of joint missions or commissions of inquiry, organized

research activities. In the organization of these activities, there is evidence that many countries did not follow any systematic and well coordinated policy with respect to focus, scope, organization, and mutual cooperation. Professor Albert H. Moseman shows that the emphasis in the fifties and early sixties on extension and community development programs on the assumption that technology and materials from development countries can be processed for the good of developing country was inadequate.¹ The emphasis was so strong that even the necessary adaptive research to ensure the success of extension was not undertaken and it soon became clear that technology and resources developed to suit particular climatic and cultural conditions of a developed country might not be suitable to different conditions prevailing in a developing state.² With the advent of the Green Revolution the need for indigenous research by local centres and cooperative research between national and international systems are increasingly recognized. Although several international and regional research centres in agriculture have become quite prominent, yet, the question of dividing responsibility between these international and regional centres and the local and national institutions seem to be very important. Professor Moseman also shows that national and local centres are no substitutes for international and regional institutions or vice-versa. He seems to argue that national research capability is very crucial and should be given considerable emphasis because not only does each country have its location specific problems or country specific crops to cater, but it also needs for the sake of independence its own autonomous bases of knowledge and technological capacity. Aside from inadequacy of focus and confusion in scope, there is considerable diversity in organizational patterns and the consequent difficulty in achieving mutual cooperation. Departmental research centres, autonomous commodity institutes, university research departments and similar other establishments exist within national and provincial frameworks. Some countries (e.g. India, Malaysia) have made attempts to ensure some uniformity and harmony by establishing a national organization (ICAR, MARDI), fixing national priorities, abolishing commodity institutes and encouraging closer cooperation among research centres on specific research activities. The pressure for similar action seems to be growing in other countries, especially in Indonesia and the Philippines.

1. Albert H. Moseman, Building Agricultural Research Systems in the Developing Nations (New York: The Agricultural Development Council, Inc. 1970)
2. Of course we must note that the priority in developing countries, as in India until 1964, was on protective research aimed at stabilizing the yield of existing varieties under adverse climatic conditions.

MANAGEMENT PROBLEMS

It would now seem that many of these Asian countries have at least a basic infrastructure of research organizations and institutions in the field of agriculture with limited exception in the area of animal husbandry, fisheries, agri-engineering, etc. W. David Hopper rightly notes, "The abundance of research stations, district farms, government seed plots, etc., provide a base where research into modern agriculture can proceed. The need now is for the trained personnel and the organization to support, co-ordinate, and direct endeavours at these many locations."³ There is a strong current of thought that many of these organizations and institutions could be made more effective if their management could be improved. Several national and regional seminars organized in the past to study the problems of ensuring effective agricultural research identified management as a key variable and made some suggestions to come to grips with this problem. Although the cruciality of management may be debatable we can possibly agree that this is an important variable in any organized activity. For the next 10 days you will be putting the best of your knowledge and experience to a meaningful understanding of this problem and to devising realistic ways to improve the management of agricultural research centres in Asia. What I propose to do is to review briefly some of these problems and to highlight a few issues that appear important to me.

From a survey of country reports presented in a conference on Development of National Agricultural Research Systems held in New Delhi in 1971, it will be seen that the effective workings of agricultural research systems suffers from the usual management constraints such as inadequacy of leadership, lack of trained personnel, insufficiency of resources, and inappropriate organizations and processes.⁴ One could perhaps say that these constraints and inadequacies are almost universal with the only difference being that the severity of constraints and the degree of its inadequacy vary from country to country and from organization to organization. As large research organizations evolved recently in many developing countries, these inadequacies became particularly severe. These inadequacies and constraints can be put into two categories - external and internal - to the research organization. Among the external problems, we can list the unfavorable development milieu, lack of coordination, the relevance of research, diffusion of research findings, and the imbalance in the scope of research. Among the internal problems there will be question of appropriate conditions of work, staffing, and other personnel problems.

3. "Mainsprings of Agricultural Growth in India" Indian Journal of Agricultural Science, xxxv (June 1965), p. xiii.

4. Albert H. Moseman (ed.), National Agricultural Research Systems in Asia (New York: The Agricultural Development Council, Inc., 1971). Also see Isaac Arnon, Organization and Administration of Agricultural Research (New York: Elsevier, 1968)

It has been frequently observed in many countries that the atmosphere for research, especially for agricultural research, is not very appropriate. Although agricultural problems, especially the food problem alternately haunts the leaders of many developing countries as a nightmare of disaster and entices as a rainbow of hope, yet very few of them seem aware of the nature and dimensions of agricultural issues. The primary producers all over the world do not usually get as much respect and recognition as their urban and industrial counterparts. Yet, nowhere is this gap in recognition and respect is wider than in the developing countries. The whole rural life is considered somewhat inferior and only mobility to urban areas through education or other skills is regarded worthy of man's existence. This negative attitude towards farming and farmers has unfortunately also been transferred to agricultural research and its allied activities. Similar denigration of agricultural activities can also be noticed in the status and role of agricultural departments. Competent officers are not attracted to agricultural jobs and bright students seldom choose agriculture college. Low salaries, inadequate facilities and discrimination are usually the fate of agricultural field officers.

This slighting of agriculture as an occupation and agriculture activities as standing very low in the hierarchy of people's values are facts of life in many of these developing countries. If we think that agricultural research cannot make any headway without a basic change in the milieu, we are in essence waiting for a revolution; for only through genuine revolution can these values and priorities be changed overnight. But since a revolution is not in sight in many Asian countries, there is scope for reform, and whatever contributions agricultural research can make towards making the perceptual milieu more favorable should be given serious consideration.

The issue of coordination created by diverse research agencies with autonomous base of support and line of control has received considerable attention. It is alleged that such loose and disjointed policies led to excessive proliferation of efforts, duplication of existing work, and dispersal of scarce technical and monetary resources. Not only is there a lack of coordination between and among various research outfits within a

nation, but it is also alleged that there is a considerable lack of cooperation between the national research institutions and regional and international centres. We have noted earlier that several countries are making efforts to bring about increasing coordination and harmony in the field of agricultural research. The question whether such coordination would significantly improve the performance and research effectiveness is yet to be seen. Whether a national research organization like ICAR or MARDI will be able to provide the guidance and focus for fixing research priorities and directing the necessary skills and resources to operating institutes without reducing the research flexibility is yet to be seen. While the result of improved coordination can be left for future study, yet it is possible to argue that in view of limited resources and expertise, a country must have some mechanism to decide its priorities and try to channel its resources and expertise to fulfil those priorities.

The accusation especially coming from non-researchers that agricultural research is theoretical and of "ivory tower" type is very common in developing countries. Like many of these oft-repeated charges, it is easier to criticize than to understand its real causes and operation. While it is perhaps possible to dispute the whole validity of the distinction between theoretical and practical research, it is perhaps possible to argue that a significant portion of agricultural research activities are not related to the immediate needs.⁵ But here again the responsibility for the relevancy of research cannot be completely laid on the researcher themselves. What is relevant or irrelevant and what research would receive priority or not, cannot be left to be decided by the researcher only. If the policy-makers do not decide the priority or participate in the making of this priority and if it is left only to the researcher then it is likely that some of these researches will not be very relevant. Because one must realize that the research issues and the research topics are also decided by the researcher's interests, his training and background, and other non-research criteria such as the possibility of living in a town or living near one's home or any similar other considerations. For example, while a research scientist may have interest to work in isolated rural situations, because of his other concerns, such as his children's education or having a house built in a town,

5. For example, a survey of research allocation in India from 1938 to 1958 and 1962-63 to 1965-66 shows research fund on rice and wheat was deplorably low (less than 5%) as compared with other items of agricultural research, say, fruits and vegetables (18%). See "Agricultural Research Expenditures in India" (mimeo) Rockefeller Foundation, 1967.

he may prefer to reside in an urban area and engage in administration or research activities with less relevance to his own area of competence. However, what is significant to note here is that the relevance of research is an important issue that cannot be left only to the discretion of the researcher alone. Here the leaders of society and policy-makers must play their role and must be made aware of the issues in research especially the questions, basic issues and the knowledge they need to improve their agricultural productivity.

Another problem in research management is the ineffective link between research activities on the one hand and the users of research knowledge - farmers, and policy-makers - on the other. Frequent mention is made of research work being carried in isolation with no contact or input going to extension activities or to the policy-making process. The delivery system for the effective dissemination of research results is an important component of any research system and the absence or ineffective contact between research and extension and research and policy-making process should deserve serious consideration. Hopper makes the point succinctly when he says "dynamic research is one of the mainsprings of agricultural growth, but research without communication to farmers is as barren as communication without research results."⁶ There is evidence that many countries are experimenting with new approaches and structures to forge a better link so that research findings are made available for farmers' use. What is not yet sufficiently realized, as Mr. S. Swaminathan, the Director of the Indian Agricultural Research Institute has rightly pointed out, is the significance of "the critically important task of communicating or delivering the results of research to the policy-makers".⁷ While we may develop excellent research systems, its findings may not find useful application because politicians and administrators might remain ignorant about the implications of research finding. Hence the research management has a dual responsibility of seeing that meaningful research is carried out and the results are put out in a way that will convince the policy-maker to take necessary follow-up action. The researchers must spend considerable time and energy to determine the economic potentials of their findings and should endeavour to interpret the whole research results in operational and socio-economic terms.

Another frequently-mentioned shortcoming is the question of balance in the research priorities and emphasis, especially among research on crops,

6. Hopper, op. cit., p. xiii

7. Moseman (ed.), National Research Systems ..., p. 101

livestock, and fisheries. Many countries tend to emphasize crop research at the cost of study on improving livestock and fishery population. There are also examples of inadequate research emphasis in the fields of agricultural economics, agri-industries, and agricultural engineering. This question of imbalance may be seen perhaps as a question of time and resources and it is likely that with more resources and more personnel it would be possible to correct this imbalance in research focus. There is perhaps a need to develop a national framework of research priorities and emphasis so that any persistent neglect or overemphasis can be detected and rectified.

Many would tend to argue that the internal problems are more important and have a more debilitating effect on the researchers and their performance. Several internal problems that stand in the way of creating conditions for effective research work can be identified. Very common is the question of salaries and benefits of the agricultural research workers vis-a-vis researchers in other occupations. It is noted that salaries in some countries are deplorably low for agricultural research workers and other benefits are similarly at the inferior level. Efforts are being made in many countries to upgrade the salaries and privileges for agricultural research workers vis-a-vis industrial and scientific researchers, but the advance made has not been adequate. In addition to salaries, there are examples of unsatisfactory working conditions such as not properly equipped laboratories, inadequate housing facilities, appropriate educational and social environment for the family and similar other conditions for good living which an industrial or scientific researcher located in urban areas has access to.

The problem of retaining researchers on the research activity through an adequate structure of incentives and rewards has been a baffling issue in developed as well as developing countries. In many cases it has been observed that trained people are promoted to positions where their expertise can no longer be used. Such promotion or transfer of people from research to administrative or managerial positions do create significant loss of competence and research expertise. It is important that ways and means have to be found to make the positions of research workers more comparable with administrative and managerial positions.

The question of lack of trained people is universal for any sector and more so in research and other activities. On the basis of the last two decades of experience it will not be unfair to observe the exclusive dependence on foreign training would never be adequate to provide a continuous supply of expertise for research activity. Efforts have to be made to evolve a system in which provision for local training and maturation on the job would be available along with adequate provisions for keeping trained people once they join the organization. Qualified people with foreign training are often not happy on the job, and leave their position either for administrative jobs within the organization or move to industrial or business concerns in the country and in some cases even leave the country altogether.

These internal problems deserve a closer scrutiny and analysis. They need to be discussed in each national and local context and policies and programs have to be evolved to resolve these problems.

KEY ISSUES

We have so far made a brief review of some of the management problems that we usually find in research systems and organizations in the field of agriculture. What I propose to do in the remainder of time is to emphasize some of the issues that appear to be very significant in effective research management. The three key issues that I choose for further emphasis are: the development milieu, commitment of researchers, and diffusion of research knowledge.

The question of an appropriate developmental milieu or environment seems to be the most crucial not only for research activities but also in other developmental programs and policies. The assumption that the leaders of most developing countries are development-oriented and do take necessary efforts is ill-placed and definitely not borne out by facts of the last two decades. There are cases where development is only given a lip-service by policy-makers and the dominant policies and behaviour patterns are not geared to development but rather to other things like perpetuating power, preserving vested interests, and similar other goals. What we understand by development milieu is a framework of decision-making for key groups and leaders of society where emphasis and

priorities go for developmental issues and problems. But such framework of decision-making still remains an ideal in many Asian countries. For example, most of the Asian countries are heavily dependent on agriculture, yet you will notice that agriculture is usually the most neglected sector in the society, in the government, in the public eye and in the social and status hierarchy. The inherited colonial framework of mind marked by alienated ways of life, ruling attitude of the elites, sharply unequal distribution and a denigrated outlook towards rural life has not been changed significantly. Even in our development policies and programmes, many Asian countries seem to be suffering from misplaced priorities and continued dependence upon inherited administrative and managerial framework. By all counts, it would be appropriate to say that adequate developmental milieu is not present in many developing countries. It will be perhaps reasonable to predict that a favorable development milieu may not be available for some time to come. Nevertheless, blaming others which is so common a phenomenon in developing countries would not improve the situation. Every sector and group in society has an obligation to see that a favorable developmental atmosphere is brought about and there is a special obligation on the part of research agencies in this regard to see that the problems of development, the issues of development, the key constraints on development are clearly understood by key groups and leaders who have influence on the making of policies and programmes for the society. That is why I emphasize the role of agriculture research institutes and organizations in promoting the generation and sustaining of developmental environment by making research more practical-oriented, by making its findings more easily understood and by creating a sense of urgency for the solution of agricultural problems. If every organization within a nation concentrates on its tasks and obligations and could persist in making contributions in the face of difficulties, there is every reason to hope that conditions for development would gradually become favorable. The important question is the concentration on local problems and local capacities, for in this world of intense internationalism we tend to forget that the process development and change is primarily an internal one requiring concentration and commitment from its participants. But if scientists and organizations wait for the appropriate developmental milieu for their full action, they will be perhaps waiting for a revolution and who knows that the waiting may be a long long one.

It is much easier to talk about the commitment of the researcher and

research organizations than to really generate and sustain such commitment in many developing countries. We all are aware of the familiar problems of low salary and bad working conditions, dominant urban pull, non-recognition or inadequate appreciation of research work and the usual predominance of administrative ethos. Perhaps no one here will disagree that these are very important considerations and unless these are changed or made at least congenial towards research atmosphere, it will be very difficult to sustain the spirit of commitment even after it has been generated. But when all things are said and done the factor of commitment still remains very significant and without a minimum personal commitment, irrespective of the conditions of work, no useful research work can be continued for long. Even under adverse circumstances, it is one of the basic management responsibilities to secure and sustain a minimum level of such commitment from the researchers.

While researchers and research leaders must realize that no developing country could possibly match salaries or create conditions of work as they exist in many Western countries, it is important to realize that conditions of work are relative and have to be comparable with other sectors of **society**. The obsession with ideal conditions which haunt many foreign trained researchers can only be overcome by a commitment from researchers to the needs and priorities of developing their country and people. Without this basic commitment and interest, one can perhaps say that all the facilities given would not be adequate to keep the researcher's interest focused on the vital problems. I am not inclined to underestimate the importance of either commitment or the environment but while agreeing about the need for better conditions I must say that commitment must remain the source of the researcher's motivation and perhaps this commitment carried for a period of time may generate sufficient pressures on the society to give the researchers necessary recognition and reward.

Once the research is carried out and the results are finalized, it is vitally important that the research findings and knowledge are transmitted to the people who make the policies and to the people who will use it. Research organizations are usually blamed for their failure in making the policy-makers aware of their research activities. Conversely, experts show considerable surprise at the lack of policy-makers' understanding of research activities or technical matters. They are usually frustrated when they see generalist

civil-servants find it easier to communicate to the policy-makers and develop better rapport. Experts in many developing countries also express their shock at the inadequate understanding of developmental problems by policy-makers. But a closer scrutiny would show that such surprise, frustration and shock are not well-placed. Experts seldom realize that policy-makers in developing countries are not familiar with even basic scientific or technological knowledge. They frequently do not have an educated background and when they have formal training, it is usually in the liberal arts or in such areas as law. Civil Servants as well share this liberal arts tradition and as a result, the politicians and senior civil servants frequently share a common experiential base. In many cases, research findings have not been expressed in sufficiently common-sense language as to be easily understood by the policy-makers, and hence it is the civil servants who in most cases have to communicate technical matters to their political bosses. What is needed and what should perhaps receive very high priority is that the research need, the research findings, and the implications are to be spelled out in propositions and terms which politicians can understand. Research leaders and organizations have to put very high priority to make or create this awareness among the top policy-makers and to create such awareness they have to spend time and energy to learn to talk in the language of the politicians.⁸

In many countries it is found that considerable money, energy and time have been spent to pursue the farmers to adopt better knowledge, better techniques and methods. In the 50's and early 60's this extension approach was the dominant way of improving agricultural activity. Yet, until the Green Revolution has shown to farmers the sure way of increasing production - all these earlier efforts have not born sufficient results. What is perhaps important here is to understand why farmers do not accept or follow certain methods even when they prove to be useful and effective. Here perhaps a word of emphasis may be required to stress the relevance of farmers' needs in the selection of research problems and to create necessary incentive among the farmers to use the research findings. For example, in cases where increased production has resulted in lowering prices, the question of subsidy becomes very important.

8. When political leaders see the pay-offs from agricultural research, they pour more resources and their support into it. Increased resources and greater support from state legislators were in part responsible for better performance of some land-grant colleges than others in the United States.

CONCLUDING OBSERVATIONS

What this discussion leads to is probably the significance of practical research in the overall strategy of change. It will be seen historically that if changes are delayed for a long time, revolution takes over and reform is no longer possible. Many countries of Asia have so far been able to delay the revolution and the strategy of reform has worked with reasonable success. But recently the situation has been made acute by serious rural impoverishment and growing unemployment and if adequate reform is not forthcoming, the revolution may not be far away. What is now needed is greater change at faster speed and such change can possibly come in a framework and atmosphere of practical debate based on realistic knowledge which can only be provided by useful and practical research. The confrontation seems to be imminent and whether this will be a confrontation of knowledge or a confrontation of violence only the future can tell. But for any confrontation with knowledge to succeed, it will require assistance from practical research.

Before I conclude, I must express a word of caution about the usual way in which the problems of management are approached in developing countries. In most cases in both public and private sectors when management problems are encountered, training programs are devised for the personnel on the assumption that people who receive management training will do a better job. Accordingly, some officers are sent abroad while many others are sent to institutes, staff colleges and other training facilities within the country. These training programs are usually supported with foreign aid. Such activity has been ongoing in many countries for at least two decades, yet, perplexingly this training approach has not been adequate to cope with the management problems constraining development programs.

To me, the problem appears to be more complex than can be handled by imparting training alone. In the first place, not all management issues and problems are amenable to solution by even better trained management. Also giving training is no guarantee that trainee will be able to use it or will use it, even if the opportunity to better organizational performance presents itself. Other aspects of the management problems, for example, why people and the system do not work towards efficient functioning, are not being sufficiently analyzed or

investigated. The question of what dominant forces and pressures in the society and in the management environment put constraint on effective functioning have not been sufficiently analyzed, and in those cases where they have been assessed, little has been implemented. These and other related matters are thought in some cases to be too sensitive for local action and beyond the scope of the foreign aid. As a result, millions of dollars have been spent on training personnel either abroad or locally without comparable benefit in the improvement of organizational performance.

It could be hypothesized that failure may be due to some limitations in the training programmes. It is often heard that overseas training is unrelated to the local problems, and the skills and approaches followed in such training have little relevance to the issues and problems that trainees face on the job. Even when the training has been sufficiently indigenized and made relevant, the trainees, upon their return to the job, find it difficult to change the environment in order to introduce new practices and better ways of doing things they have learnt in the course of their training. It would seem that the dominant patterns of administration and management need to be subjected to scrutiny and debate. Indeed one can make the plea that the problem warrants not more training but more understanding of the management dynamics and environment and generating necessary awareness of their significance. There is a need for more practical research so that knowledge and not rumours and hunches become the basis of discussion. Only such knowledge can provide the framework of reform and change without violence.

Management Problems in Research Organizations

Despite the fact that only two percent of all research funds are spent in developing countries, in the last two decades many organizations have been established in developing countries to carry out research in different fields. Many of these organizations have made substantial contributions to the overall planning and implementation of development programmes. Nonetheless, it is generally recognized that the potential of these research organizations are not fully realized and the problems that beset the research institutes and centres need more attention than they are now given. These problems get exposed in very general terms in conferences and seminars at national or international levels and exist in three broad areas: (1) the establishment of research priorities that reflect the needs of society, (2) the planning and performing of research projects, and (3) the application of the research results in the society. In a few cases, the study of research organizations goes into specific discussion of problems and constraints, but in general, there is not sufficient problem-oriented research carried out into the management of research activities within a particular context. For example, in many research institutions the mechanism and the process of deciding research priorities on a continuing basis is not given sufficient emphasis. Often it is not realized that there have to be studies undertaken before deciding what research studies are to be carried out by an organization and that there has to be considerable emphasis on the spelling out of criteria that can be used in selecting ideas from conflicting research needs and in developing research projects. Similar issues have to be resolved in organizing research and also diffusing research results.

Managing research is as important a problem as managing any other activity concerned with production or service. Yet, while sufficient concern is raised about research into activities dealing with programmatic activities in the field of agriculture, health, population etc., not enough concern is found about how to manage research itself- that is the research organization, its personnel, its focus, its linkages and other relevant aspects. In the developed countries which have an enormous research infrastructure, considerable knowledge has been built up on the subject of research management. A survey of these management problems in research organizations may give us some idea as to their nature and dimension, but caution has to be exercised in that these problems may not appear in the same magnitude and relationships in the developing countries. It is proposed

in this paper to review in general, the management problems in the research organizations of developed countries so that it may prompt us to think about management problems of our research institutions and lead us to explore the need and possibility for problem-solving studies in the management of research in developing countries.

It seems generally accepted that research management poses some problems that are common in any management situation (such as developing and sustaining high morale among the employees, adjusting formal process with informal pressures) and other problems that are considered unique. The peculiar problems of research management will vary according to types of research (fundamental, applied, development), nature of agencies (university, government institutes, cooperative institute, independent research organizations), and type of societies (developed, developing) in which research is carried out. However, an attempt is made to identify broadly research management problems under three headings - unique problems of a research manager, sources of conflict between researchers and managers, and problem of managing research environment.

Unique Problems of Research Managers/Directors

Most research managers/directors consider at least four problems unique to their job. The first concerns the relationship between top management of their company or government and the research organization. Most managers feel that the top management or government policy-makers do not understand the nature of research. They either expect too much or they expect the wrong things from the research agency. Furthermore, they do not recognize that one cannot run a laboratory or research agency the way one runs a manufacturing plant or a government office. As a result, research managers/directors are in a position of having either to fight top management to protect the research organization or else to give in to them and risk damaging the research effort.

The second problem deals with the status of researchers in the research organization. The specific question is how to reward superior research performance. All methods (increase in salary, promotion to a supervising position, fringe benefits or hierarchy of technical titles) involve difficulties and the issue remains as baffling as it was decades ago. The third problem deals with the difficulty encountered in most research organizations when making

personnel decisions involving scientific employees. Decisions about recruitment, promotion, transfers and assignments - all of these involve complications (due to personal and professional nature) which research managers think somehow unique to a research organization, and were not always compatible with the usual civil service regulations. Finally, most laboratory directors or heads of research agencies encounter difficulty in trying to get their first-line supervisors to manage in the traditional sense. Many of them seemed reluctant, for instance, to talk to the scientists/researchers in their sections or departments about their personal shortcomings on the job. Similar difficulty is encountered when supervisors are asked to enforce company rules or government policies or are required to report progress or discuss their work with management during planning sessions.

Sources of Conflict Between Researchers and Managers

Most research organizations face threat of or actual conflict between researchers and managers who on rare occasions agree on the goals, values, and methods of research activity. In general the managers tend to place a high value upon financial soundness; hierarchical authority; loyalty to the company; conformance with established policies and procedures; growth in business volume and in size of the organization; "getting action"; "getting ahead"; and tangible private rewards (promotion and increased pay) for superior performance. The researchers, on the other hand, are trained in "organized skepticism" - to think independently, to suspend judgement until adequate data are at hand, to refrain from making claims until they can be substantiated, to accept the scrutiny of fellow scientists as a part of the verification process (as well as a means of obtaining recognition), to demand of himself and others rigorous logic and the greatest possible objectivity in the course of his work, and to submit to the authority of established scientific criteria and technical competence rather than the authority of hierarchical position.

The "culture gap" between the managers and the researchers can be seen in their divergent attitudes towards conformity and success. Members of management, for the good of the organization, tend to require conformity to norms internal to the immediate organization. Scientists/researchers tend to encourage independence of thought and action in their work and hence to look with disfavor upon conformity - except to the norms of science, which are external to any

given organization. "Success" for the management community means going up the company's supervisory ladder (and sometimes shifting to a larger company in order to transfer to a ladder with greater scope for advancement), together with increased authority, responsibility, and monetary rewards. Success for the scientific community depends upon establishing a reputation among recognized scientific authorities (wherever they may be) for high quality and original research work. In recent years the achievement of such a reputation might well bring higher level positions in industry and increased financial rewards, but this has not always been true and it does not necessarily follow today. It does seem that practically every assumption the scientist makes about the condition necessary for effective scientific investigation - freedom to work on projects of his own choosing in his own way, freedom to communicate with scientists in other institutions, freedom from having to account systematically for time and money spent or results obtained, the need for independent verification of conclusions, and so on - these are directly contrary to the assumptions about supervision and control held by most managers.

Problems of Managing Research Environment

The problem of developing and maintaining right kind of environment that is congenial to fostering creativity and innovation is of immense importance in research management.

Several factors that have influence on this environment maintenance will be identified. First, the role and functions of research or laboratory director - his technical reputation, his ability to encourage new ideas and keep them alive, his skill in communicating with higher management or his sponsor, his subordinates, and his ability to attract talented staff to his agency - makes a major contribution to the proper environment and the success of research projects. Without doubt, the director is a major factor in the success of a research institution because he is in a good position to maintain the type of environment desirable for exploratory work.

Second, the styles of management (authoritative versus adaptive) have relevance to the maintenance of research environment. An authoritarian management

system with its emphasis on hierarchy, status, restrictive communication and limited lateral and vertical contacts is found more conducive to military-like organization and colonial systems. In contrast, an adaptive management with its emphasis upon diffusion of ideas, freedom of contact, and diverse sources of authority and status provide atmosphere congenial to research and exploratory work. Not many research agencies, more so in developing countries with their authoritarian legacy than in Western democracies, seem to realize the relevance of the management style.

Third, intrinsic in the style of management is the attitude of managers towards subordinates. There are three types of assumptions (passive personality, active personality, participant personality) on the basis of which can a manager form his attitude towards his subordinates and each such assumption has distinct implication with respect to the way a manager defines his job, and to the effect such definition has on the performance of his subordinates. Research organizations appear more successful and productive where managers assume that researchers need only broad guidance and are generally capable of defining and carrying out his job. Wherever the managers have assumed, as many do in developing countries, that researchers need to be closely directed and supervised, the outcome was unsatisfactory.

Fourth, the question of multiplicity and hierarchy of goals in an organization. Management's preoccupation with organizational goals and their own advancement needs make them insensitive to the needs of their subordinates and superiors. Not many view the organization as a social system with a multiplicity and hierarchy of goals that needed to be adjusted and harmonised and not suppressed.

Fifth, the relevance of personal commitment to the maintenance of research atmosphere. Carrying out significant research work or perserving atmosphere congenial to research work require intense personal involvement. Many suggest that there is hardly anything called neutral management of research. Organizational atmosphere becomes charged with emotional involvement on the part of its members and managers have to adapt its skills to the nature and intensity of this charged atmosphere.

Relevance of Research Management Problems Noted in Some Institutions of Developed Countries to Research Agencies in Developing Countries

1. Most of the issues raised in the management of research activity can be found in research organizations of developing countries. Management problems in research organizations tend to have universal validity, although the constraints that cause such problems may have some divergence. For example, research agencies in developing societies have to work under conditions of perpetual rush, acute shortage of trained people, frequent changes of research staff, limited career opportunities for research people and inadequate linkage between research and operation. These conditions make management tasks more complicated and often lead to frequent breakdown of research management (as evidenced from low research productivity). Despite considerable lip-service to research, there exists a lack of reasonable understanding of the need, utility and proper organization of research activities. These external constraints play a significant role in causing management problems in research organization of developing societies.

2. Management problems of research agencies in developing societies seem to manifest in (1) the critical role of research director - his view of his subordinates and his function (2) importance of confidence and the consequent support of controlling bodies (higher administration, individual companies) in research agencies, (3) need for preserving a research atmosphere by ensuring adaptive management style, flexibility of rules, commitment to a mission, respect for sensitivity and needs of professional people in making personnel decisions, (4) importance of maintaining a two-way channel between the sponsor and the research agency regarding research issues and problems without prejudicing the autonomy of research institution in conducting investigations and preparing results, and (5) the relevance of human relation skill in handling conflicts that arise out of clash of value orientations between managers and researchers.

Research Needs in the Area of Research Management

The similarity of research management problems across developed-developing countries may be superficial, because their nature, magnitude and the pattern of interaction may show considerable divergence. The main rationale for studies in research management in developing countries is to identify, by applying problem-oriented research approach and techniques, (1) management problems in their own context, to determine their nature, significance and interrelationship, (2) to study the nature and significance of constraints that have bearing upon the resolution of management problems, and (3) to evolve a contextually oriented strategy for the improvement of research management in specific cases. It is expected that such studies may ultimately lead to improvements in deciding research priorities, research planning and execution, and diffusion of research findings.

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