

A FRAMEWORK FOR EVALUATING RESEARCH MANAGEMENT  
TRAINING WITH AN APPLICATION TO UNIVERSITY OF MANITOBA  
RESEARCH MANAGEMENT WORKSHOP GRADUATES.

BY

HLEZIPI MABEZA

A Thesis

Submitted to the Faculty of Graduate Studies  
in Partial Fulfilment of the Requirements  
for the Degree of

MASTER OF SCIENCE

Department of Agricultural Economics  
and Farm Management  
University of Manitoba  
Winnipeg, Manitoba

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ISBN 0-315-92190-0

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## ABSTRACT

The purpose of this study was to develop a model for evaluating management training and to apply the model by using it to evaluate the International Development Research Centre (IDRC) Research Management Workshop at the University of Manitoba.

The role of human resource development (HRD) through training is recognized as one of the critical components of development strategies. While the role of HRD is expanding, so too are expectations for its effectiveness, power, and worth. As organizations invest more and more in HRD, there is a need for comprehensive and effective evaluation approaches. Evaluation of training is defined as a systematic process of collecting and assessing information about a training activity which can be used for guiding decision making, and determining its relevance, effectiveness, and impact. Evaluation of training, like any project evaluation, can be categorized into three main stages; ex-ante, on-going, and ex-post evaluation. Ideally, evaluation should be conducted at each of the three stages during a training activity.

Recognizing that organizations need to justify resource allocation to HRD through evaluation, this study aimed at developing a practical framework for evaluating management training. Researchers in the past have addressed similar issues and they have come up with various training evaluation models or frameworks. Such models exist in fairly large numbers and given resource constraints, and to avoid a reinvention of the wheel, a review of existing models became a starting point for this study. The review showed that most evaluation models are created to address a specific question or problem. Hence, no single best model could be identified to suit the purposes of this study. The researcher picked out three models and synthesized them into a single model that was more suited for this study. The three models were, Stufflebeam's CIPP model (1966), Brinkerhoff's six stage model (1988), and ISNAR's training evaluation model (1990).

Originally, developing a training evaluation model was to have been the scope of this study. However, as a consequence of the opportunity to work at the International Service for National Agricultural Research (ISNAR) during the conduct of the research, the study was extended to the testing stage of the model. The model was applied to a group of participants who had gone through the IDRC Research Management Workshops at the University of Manitoba. These workshops grew out of a need to address the problem that most graduate programs in Canada, particularly those in scientific research, do not include general management training. The rationale for these workshops is that masters and doctorate graduates from developing countries, upon return to their countries, quickly assume responsible management positions for which they have little or no training. Recognizing this need, and with funding from the Canadian International Development Agency (CIDA), the Department of Agricultural Economics at the University of Manitoba in 1987 held its first annual research management workshop. Subsequently, IDRC took over sponsorship of these workshops and has sponsored them since 1988. The workshops, designed to cater for 25 students, are primarily for African graduate students studying in various Canadian universities. Participants are drawn from masters and doctoral programs in agriculture and agriculture related fields.

Given that IDRC channels considerable resources to this project every year, and also, given that participants take two and one half weeks of their time to attend this workshop,

it was important to evaluate the workshop in terms of its relevance and applicability to the African context. Information from the evaluation would help the funders in making decisions about carrying on with the project, expanding or terminating it. African graduate students get this unique opportunity to acquire managerial skills which are not normally taught in their graduate program. It was important to determine whether or not they were getting the most out of this opportunity by identifying the strengths and weaknesses of the program through an evaluation. Information from the evaluation could be used to improve the program.

Using the model, a questionnaire was developed for partially testing the model on participants who attended the workshops between 1987 and 1991, and had returned to their home countries at the time of the study. A total of 102 participants attended the workshops, and out of these, 52 had returned to Africa, and 50 were still in Canada at the time of the study. The 50 people who were still in Canada were excluded from the study since the goal of the study was to see how relevant the workshops were to the work of the participants once they were back in their countries.

The evaluation aimed at finding out whether there was evidence to justify continuation of the workshop, and if yes, what the modifications, if any, should be. There was no attempt to assess the impact of the workshop at either the individual level or institutional level because it is difficult to attribute changes to a particular course when so many other factors are at play. Although desirable to collect that kind of information, an approach like that was well beyond the resources available to this study.

Evaluation in the context of this study is, first and foremost, a support mechanism to management. Simple descriptive analysis may be more appropriate if that is all that can be accomplished. The study used descriptive analysis because more quantitative techniques were not feasible within the scope of the study. However, the study was able to produce useful information, and also provided conclusions and recommendations within the scope of the analysis. The information from this study can form the basis for more quantitative studies.

In summary, the objectives of the study were to:

1. To present or develop a conceptual framework and model for providing useable evaluation information on management training programs such as the IDRC/University of Manitoba Research Management Workshop.
2. Develop and propose an instrument for conducting such an evaluation given that ISNAR was prepared to provide funding for testing the model and instrument.
3. Conduct a pre-test survey on a group of students from the University of Wageningen in Holland, and conduct a pilot project to test the model and instrument on graduates of the IDRC Research Management Workshop in Kenya and Zambia.

Data were collected through in-country interviews with 13 people from Kenya and Zambia, and through mailed questionnaires sent to 39 participants from other African countries. The questionnaires were mailed out at the end of March, 1992, and by the end of July, 15 or 38% of the questionnaires had been returned. Including questionnaires completed during interviews, a total of 28 questionnaires were analyzed for this study. This number represents 52% of the sample, and 27% of the population.

Findings from the data collected were:

1. Of the respondents, 42.9% were university lecturers, 42.9% were in government ministries, 7% were in parastatals, 3.6% worked for Non Governmental Organizations, and 3.6% worked for other types of organizations;
2. Some 40% of the respondents were in management, either at line, middle, or senior management level.
3. On average, 24% of work time was spent on research, 18% on teaching, 15% on planning, and 11% on management. The rest of the tasks each took up 10% or less of their work time.
4. There was a consensus that the Workshop was very useful and that its main strength was in providing an opportunity for African graduate students to learn research management skills;
5. Participants indicated that the tool they found most useful to their work was the computer, and the skills they used the most were planning, budgeting and proposal writing;
6. The tool that participants found least useful was the logical framework from Module II and Graphics from the Computer Module;
7. The most frequently mentioned weakness of the workshop was that it tried to cover too much in too short a time;
8. Participants pointed out the need to involve more African presenters/facilitators;
9. All of the participants said they would recommend the workshop to someone in a similar position to theirs.

The basic objective of this study was to develop a model for evaluating research management training. Although the model was only partially tested on a group of students who went through the University of Manitoba Research Management Workshop, the model may have a much wider application. The model provides a basis for a more comprehensive evaluation and suggestions for further research are made in this regard in the last chapter.

## ACKNOWLEDGEMENTS

This thesis is dedicated to my Mom and Dad who gave me a solid foundation that has brought me thus far. My deepest thanks to someone who is very dear to me, and who gave me support, Hamath Sy.

I wish to express my deep gratitude to my advisor, Dr. Loyns, for all the years we worked together, and for his belief in me. My appreciation is also expressed to the members of my thesis committee, Dr. Framingham, Dr. Lobdell, and Dr. Bond. To Boniface Etuk and Eddie Mupondwa I say thank a thousand times for your time and suggestions.

I am most indebted to IDRC for funding my studies, and indirectly funding my trips to Europe and Africa. My deepest thanks to the Department of Agricultural Economics at the University of Manitoba, Canada through the IDRC workshop, for sponsoring my trip to the Netherlands. Thank you to the people in the front office, Department of Agricultural Economics for all your help.

I am grateful to ISNAR for inviting me for the three month stay and for the support I received from all the ISNAR staff. In particular, I would like to thank Paul Marcotte with whom I worked directly, Luka Abe, Howard Elliott, Doug Horton, and Beatrice Uribe for their patience in reading my work and for all the suggestions they made. I also thank Jacobine for all the secretarial support, Peter Ballantyne and Sandra for the library support.

I would also like to thank the ICRA students in Wageningen, on whom I tested my questionnaire.

Finally, I would like to thank all the graduate students in the annex for their help and friendship.

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## CHAPTER I

### INTRODUCTION

#### **Background**

The role of human resource development (HRD) through training is recognized as one of the critical components of development strategies, and governments and development agencies channel considerable resources to training. While the role of HRD is expanding, so too are expectations for its effectiveness, power, and worth. As organizations invest more and more in HRD, there is a need for evaluation approaches which assess the quality, contribution and value of training.

The World Bank in its 1986 Development Report acknowledged the crucial role of human resource development when it stated that, "However well developed, institutions are only as effective as the people who work in them". Similarly, the late Professor Harbison of Princeton University (1973) pointed out:

Human resources... constitute the ultimate basis for wealth of nations. Capital and natural resources are passive factors of production; human beings are the active agents who accumulate capital, exploit natural resources, build social economic and political organizations, and carry forward national development. Clearly, a country which is unable, to develop the skills and knowledge of its people and to utilize them effectively in the national economy will be unable to develop anything else.

Consistent with this priority on human resource development, Dr. D.R. Campbell (1985) identified a set of specific needs for students from developing countries studying in Canada. He pointed out that the lack of any management training for students from developing countries is a major deficiency in the North American educational programs; M.Sc. and Ph.D. graduates of North American universities, when they return home, very quickly assume responsible management positions for which they have received little or no preparation and training. As Nickel (1989, p9) put it, "...the ideal career path, with the future manager exposed to a series of management circumstances of increasing responsibility, interspersed with formal management training, exists mostly only in theory." According to Nickel, many research managers reach important management positions early in their career without such experience or training. The Kenyan strategic plan noted a strong pattern in the management

of the Kenyan National Agricultural Research Systems(NARS): most agricultural research managers have risen through the ranks and are first and foremost scientists, not managers<sup>1</sup>.

There is a rising demand for managerial expertise in National Agricultural Research Systems (NARS). A number of factors have contributed to this rising demand; increasing global interdependence, ongoing modernization, an attempt to eliminate foreign expertise dependency, and attempts to ensure sustainable institutional capacity building. As ISNAR noted in its 1991 annual report,

Agricultural research leaders are called on to perform complex, highly responsible tasks related to policy, organization, and management. These include strategic planning, setting research priorities, program budgeting, and the management of people, money, land, buildings, and equipment, to name a few. Doing these jobs competently demands expertise - specialized skills for which few scientist-managers have ever received formal training during their career ascent from laboratory bench to director's office.

It is with this background that the Department of Agricultural Economics and Farm Management at the University of Manitoba, Canada, identified the need to equip graduate students from developing countries with managerial skills. In 1987, a pilot project of a management workshop involving 13 Zambian students was launched by the department in co-operation with the Zambian Canadian International Development Agency (CIDA) desk. The pilot project was judged a success and the International Development Research Centre (IDRC), Ottawa, has since taken over sponsorship of these workshops. The workshops held since 1988 have a particular focus on research management since that is a mandate of IDRC. The two and one-half week long workshops are held annually and involve African graduate students studying at various Canadian universities. A total of 102 students attended the workshops between 1987 and 1991. The objectives of the workshop were developed in 1988 by IDRC and the University of Manitoba and have remained unchanged since:<sup>2</sup>

1. Provide African students at an advanced stage in their graduate programs in Canada an overview of skills and knowledge useful in management, particularly in the African environment;

---

<sup>1</sup>From ISNAR's 1990 Annual Report

<sup>2</sup> The workshop objectives as stated in the 1990 Workshop Manual.

2. Provide the students exposure to the framework, principles and requirements of research management;
3. Provide an opportunity to improve and practice communication, presentation, and group dynamic skills which are an integral part of effective management.
4. Foster communication among African students in Canada as a means of sharing their experiences and assessing the applicability of management concepts in resolving the problems of their home countries.

### **Problem Statement**

After 5 years of delivery, there was a need to determine whether or not the University of Manitoba Research Management Workshop has imparted useful and relevant knowledge to its participants. The provision of training services by itself does not justify continuity of that process. For example, Kerrigan and Luke (1987, p11) point out that even in instances where management training is provided, it is often irrelevant, overly theoretical, outdated, or far removed from the managerial problems in developing countries. Similar observations have been made by Kiggundu et al (1983), who note the following:

" Training is too often dominated by "imported" curricula using foreign material. Management theory developed in an industrialized country setting is often irrelevant or inadequate in Third World settings (Kiggundu et al. 1983, Kiggundu; 1988a).

Considerable resources go into providing the University of Manitoba Workshop, and for IDRC which provides the funding, information from an evaluation would assist in making decisions about resource allocation within that organization. For the workshop steering committee at the University of Manitoba, the information would assist them in making necessary program modifications. Future participants would benefit if the right modifications were made to the program as a result of an evaluation. To do this requires a feasible evaluation model.

The objectives of this study were to;

1. To present or develop a conceptual framework and model for providing useable evaluation information on management training programs such as the University of Manitoba Research Management Workshop.

2. Develop and propose an instrument for conducting such an evaluation given that ISNAR was prepared to provide funding for testing the model and instrument.
3. Conduct a pre-test survey on a group of students at the University of Wageningen in Holland, and conduct a pilot project to test the model and instrument on graduates of the IDRC Research Management Workshop in Kenya and Zambia.

The evaluation focused on determining the relevance of the workshop from the participants' perspective. There was no attempt to assess impact at either the individual level, or institutional level because it is difficult to attribute changes to a particular course when so many other factors are at play. Such factors include previous experience, level of education, organizational policies, performance of other workers, etc.

### **Organization of Thesis**

In this first chapter, the study has been placed in its contextual framework by giving a brief background on research management training and the need for evaluating training. Chapter II reviews literature on training evaluation as it relates to this study. This chapter also looks at various evaluation models. Chapter III looks at the University of Manitoba Research Management Workshop by discussing its curriculum, the participants, presenters, cost of running the workshop, and how the workshop is monitored. The analytical model is described in chapter IV. This is an eclectic model based on three of the reviewed models. Chapter IV goes on to describe how the model was used to develop a questionnaire for conducting the study and how it was used. In Chapter V findings of the study are analyzed. The final chapter gives a summary of, and study conclusions.

## CHAPTER II

### LITERATURE REVIEW

The chapter starts by discussing Human Capital Theory and uses it to justify the need to invest in Human Resource Development. A definition of training, and training evaluation are provided followed by a discussion of the various functions of evaluation. The rest of the chapter is a review of training evaluation literature. This review helped in identifying the models that were used to build a model for the study.

#### Human Capital Theory

The hypothesis underlying human capital theory is that individuals or their governments on their behalf, make expenditures on education, health and other human services primarily for the purpose of raising their incomes and productivity. The added output and income which result in future years then become a return on the investment made. Cost-benefit analysis is pertinent to both private and social calculations of the value of education. According to investment theory, the internal rate of return on a project is a summary statistic describing the relationship between the costs and benefits associated with the project. It is defined as that rate of interest which will equate to zero the discounted net benefits. Thus, if the project's expected net benefits are  $B_t$  per year, extending over a period of  $n$  years, the internal rate of return ( $r$ ) of this project is defined by solving equation (1) for  $r$ .<sup>3</sup>

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<sup>3</sup>  $t$  is the year, starting with year 0.

$$\sum_{t=1}^n B/(1+r)^t = 0 \quad (1)$$

By analogy, the rate of return to a given educational program can be defined by comparing the costs and benefits associated with it. In this case, the Research Management Workshop is the project. The costs consist of direct outlays ( $C_h$ ) and foregone earnings ( $W_p$ ), while the benefits reflect the differential between wages earned by the research management workshop graduate ( $W_h$ ) and those earned by someone who did not go through the program ( $W_p$ ). The number of years a graduate is expected to work is represented by  $n$ . Equation (2) summarizes the calculations to be made.

$$\sum_{t=1}^n (C_h + W_p)/(1+r)^t = \sum_{t=1}^n (W_h - W_p)/(1+r)^t \quad (2)$$

Literature makes a distinction between private and social rate of return. The private rate relates the costs of education as incurred by the individual to the benefits of education as realized by the same individual. Social benefits/costs are those benefits/costs that accrue to society as a whole.

Rate of return studies to investment in education conventionally measure the benefits solely by consideration of the earnings streams. Researchers in this field argue that other benefits from education which flow to the individual can be contained in the rate of returns calculations. Psacharopoulos (1973), suggests three ways in

which to deal with these indirect benefits. First, an arbitrary estimate of their size may be made and added on to the direct earnings stream; second, a proportion of the costs can be laid aside; and third, the statement can be made that the rates of return based on earnings alone are underestimated, and refer only to the investment component of education.

Investment in human capital promotes development, especially economic development. The early classical economists, notably Adam Smith, recognized and emphasized the importance and significance of a nation investing by accumulating human skills and improving the quality of the labour force. Caswell, in 1917, explored the contribution of education to private earnings. In 1961 and 1962, Schultz and Denison, respectively, studied economic growth in the United States. They were both able to explain it partly in terms of the direct contribution of education to the growth of national income. This opened up more studies throughout the 1960s and 1970s.

Although there are problems with devising exact measures of "returns to education", research on various aspects of the microeconomic relationship between education and development has expanded rapidly, forging a consensus on questions for study and appropriate methodologies to address these questions. Hicks and Wheeler (1980), with the support of the World Bank, reaffirmed the contribution of education to economic growth. The World Bank Education Sector Policy Statement was once more able to justify investment in education, and this opened the way to the current World Bank efforts to formulate policies on investment in education in sub-Saharan Africa.

Microeconomic empirical studies have refined and extended this base of evidence, showing that more educated men and women receive more earnings and produce more output than do the less educated. In a wide range of activities Psacharopoulos 1985 and Jameson and Lau 1982, were able to show this empirically. Fernandez, in his PhD thesis (1977), used cost-benefit analysis to do an ex-post economic evaluation of the Interlake Manpower Corps, an institutional training program designed for individuals of Indian and Metis origin in the Province of Manitoba, Canada. He calculated marginal benefits of an additional week of training using an earnings function, and included the value of weekly allowances as well. Opportunity costs were defined as the average value of expected earnings for those individuals without training. He also went on to calculate costs and benefits to government, and to society.

If these relationships are causal, and education enhances the productivity and earnings of labour, it is not surprising that governments have been willing to expend a substantial fraction of national income on public education; neither is it hard to understand why parents have set aside an increasing amount of their private disposable income to school their children, foregoing the productive contribution the children would have made to family income had they not attended school (Schultz, 1988).

A serious criticism of cost-benefit analysis has been on the grounds that earnings differentials do not measure, or even reflect differences in productivity, and that the higher earnings of the educated are not proof of the economic benefits of

education, but of imperfections in the labour market (Vaizey, 1969). In most cases, (this is especially true in developing countries) competition between employers is not sufficient to ensure that salary differences reflect, even if they do not perfectly measure, differences in productivity. According to Vaizey,

to suggest an independent influence (on earnings) of later stages of education would seem to involve a misconception of the nature of the effects of education. To imply that anyone could rationally ... calculate a rate of return on expenditure on university education is to take a view of the process of decision-making about life choices that is as breathtaking in its simplicity as it is crude in its formulation. (in Leite et.al., 1969)

Blaug argues that

social-class origins, native intelligence and community environment are so intimately intertwined with educational attainment that the task of disentangling them can easily be made to look hopeless. But to throw up one's hands at the task is to make a mockery of the goal of equality of educational opportunity (Blaug, 1970, p45).

In the case of the University of Manitoba Workshop, the task is made even more daunting by the fact that we are looking at a two and one half week program which is part of a three to five year degree program, with benefits, if they exist, experienced over a professional life time. It would be difficult if not impossible to isolate the benefits of the Workshop, consequently, an alternative evaluation procedure was required for the study. The starting point for an alternative evaluation procedure became the training evaluation literature, mainly from the management literature.

## Training Evaluation

The preceding section demonstrated, theoretically, the economic benefits of investing in HRD. One of the major ways of investing in HRD is through training. ISNAR (1992) has defined training as, ".....a process through which individuals acquire knowledge, skills, and abilities that enable them to fulfil the requirements of their job." Just as organizations channel resources to training, a proportion of those resources should go to training evaluation. The dynamic nature of economic development is such that key economic variables are constantly changing. Therefore, there is a need to measure and evaluate these variables in order to determine the overall success and contributions to national development.

Webster's Dictionary defines the word evaluate as, ".....to determine the significance or worth of, usually by careful appraisal and study." Another definition proposed by the United Nations Joint Inspection (In Raab et.al., 1991) is as follows:

*Evaluation is a process which attempts to determine as systematically and objectively as possible the relevance, effectiveness and impact of activities in the light of their objectives, i.e. their aims and purposes.*

From this definition, a narrower definition of training evaluation follows:

*Training evaluation is a systematic process of collecting and analyzing information for and about a training activity which can be used for planning and guiding decision making as well as for assessing the relevance and effectiveness of various training components. It is also used to determine the immediate results of the activity.*

The rationale for evaluation is embedded in the training process itself. Training must be conducted systematically by careful planning, innovative implementation, and rigorous evaluation. Training evaluation may be used throughout the entire process of the training activity. That implies ex-ante, on-going, and ex-post evaluation. Ex-ante evaluation is used to project whether or not investing in training will be worthwhile. On-going evaluation is built into the training process and will include evaluating content, delivery, and learning (whether any occurred). Ex-Post evaluation takes a look at the outcome of training, both expected and unexpected outcomes.

### **Functions of Evaluation**

Most authors agree that the main function of evaluation is to facilitate in decision-making. According to Weiss (1972);

*The basic rationale for evaluation is that it provides information for action. Its primary justification is that it contributes to the rationalization of decision-making.*

The FAO definition of training evaluation also states explicitly that the information collected during an evaluation facilitates decision-making. Decisions made include (a) decisions about program continuation, expansion/contraction, and certification; (b) decisions about program modifications. The first type of decision requires information that answers questions on whether or not the program was a success, whether or not objectives were achieved and what its effects were. Answers to these questions can be obtained by carrying out a comparative or absolutist type of evaluation.

In the case of comparative evaluation, results of the program are assessed in comparison with the performance of a similar program or by comparing with the earlier performance of the same group. Absolutist type of evaluation entails judging results in relation to performance criteria derived from program objectives. On the other hand, decisions about program modifications require information about program processes rather than program products. This type of information may be obtained at all the stages of training: needs assessment, objectives, development of training material, delivery and output. For example, if needs change due to advances in technology it may be necessary to change the content of the program in response to a different 'context'.

Evaluation will provide or generate back-up material for budget requests to maintain or increase the activities of the program from whoever is funding the project. Increasing awareness of the scarcity of resources demands that evaluation take place to enable the allocation of resources in the directions that are believed to be most useful. Evaluation provides a reflection on a project's activities, provides insight into factors that contribute to project success or failure and allows examination and learning from past experience (CIDA, 1986). It also assists in identifying priorities for subsequent training activities.

For trainers, evaluation will expose any flaws or strengths in the program which the trainer can then act upon. In the case of the trainees, evaluation in some instances can reinforce the learning experience. It also gives trainees an opportunity to contribute to the program by making their opinions and perceptions of the program

known. This will help trainers design and replicate successful training programs and determine the reasons for the failure of unsuccessful ones.

### **A Review of Training Evaluation Literature**

This review will focus on training evaluation literature. Most of the literature reviewed in this section is from Education and Management, mainly from the 'Journal of Management studies', and the 'Training Development Journal'.

The concept of evaluation has received widespread recognition as beneficial, but the practice of evaluation has lagged behind. A.R. Hoyle (1984) makes the distinction between evaluation of education literature and training evaluation. Evaluation of education deals with lengthy educational programs in schools and to a much smaller extent tertiary institutions. Training evaluation on the other hand, is usually concerned with the assessment of brief programs for adults, in non-school situations, on subjects which are not susceptible to objective measurement. ISNAR (1992) has defined training as, "..... a process through which individuals acquire knowledge, skills, and abilities that enable them to fulfil the requirements of their job."

Early definitions of evaluation placed it in the context of determining whether or not stated objectives were achieved. Hamblin (1974) rejected these earlier definitions of evaluation because they were concerned only with pre-determined objectives. In his view, the definitions need to take into account all effects, whether anticipated, desired, or not. He argued that assessing total value either in social or

financial terms was impossible. Instead, he suggested that the trainer should stay within bounds of what was feasible. He offered his own definition of evaluation:

...any attempt to obtain information (feedback) on the effects of a training programme and to assess the value of the training in the light of that information.

His argument was that training is not an isolated event that takes place in a vacuum, but must take into account, people, their knowledge, skill and attitude, and their capacity to use these to achieve organizational goals. Organizations in turn, are impinged upon by various external factors over which they have no control. Hence any assessment that is carried out must take into account the context within which training is conducted.

Kirkpatrick (1975), on the other hand, gives a collection of ideas directed to the practitioner of supervisory and management training. He uses theory to provide a practical model of how to evaluate a program. Kirkpatrick summarizes evaluation strategies as they apply to four broad areas: (1) reactions, (2) learning, (3) on-job behaviours, and (4) impact on the organization. Reaction assesses participant acceptance of a program. Learning is defined in terms of the extent to which the principles, facts and techniques are absorbed by participants. Behaviour concerns whether a newly learned skill will be applied to the job.

When compared to education evaluation literature, training evaluation literature tends to focus on the results of HRD programs as opposed to the monitoring of the actual training process. This is especially true with researchers who stress cost/benefit methods like Kearsley (1982) and Phillips (1983). In the sections that follow, a number of evaluation approaches or models will be discussed.

## **Chain Consequences Resulting from Training**

In the 1970s, people began to look for alternative ways of measuring the effect of training. Burgoyne and Singh (1977) introduced a notion called "chain of consequences". Hamblin (1974) bases his model on this notion. When a trainee goes through a program, he/she reacts, possibly in a way leading to learning. The learning may affect job behaviour thus affecting others in the organization. This can lead to an effect on the overall organization.

This approach has received some criticisms because as Hamblin (1974) showed in his study, "learning" is not easy to measure. It is even harder to measure changes in the higher levels of the chain. In instances where outcomes are successfully measured, attribution is not that obvious since there are any number of factors, which could have caused that particular change. Such factors include inherent capability, work experience, and organizational policy. Thus, it is difficult to measure benefits of training.

In recognising the shortfalls of this approach, researchers started to focus on specific parts of the evaluation process in the hope of carrying out more thorough, fruitful studies. In a normal working situation, it is hard to have a control group because the working environment is never the same. Once this difficulty was recognized, researchers made an effort to include the context as a variable which affects the results of training. A good example of the "context" oriented approach is the study carried out by Thurly, Graves and Hult on evaluating a junior management training program for British Airways (unpublished report). They looked at the

external constraints which affected the selection of people for the program, the decisions taken by trainers before and during the program and the nature of the follow-up activities. Context in their case excluded diagnosing the overall needs of the organization, rather, it focused on factors that might affect the implementation of the program after its general direction and objectives have been determined.

### **A Comparative Evaluation Approach**

This is an approach that has been used in educational evaluation more than training evaluation. Students are given pretests, followed by different educational experiences. After a period of time, tests are carried out again and a comparison of the different methods is made. The difficulty with this kind of approach when applied to management training is that the potential sample size is much smaller than samples of educational evaluation due to the relatively smaller scale at which management training is carried out. In the case of the IDRC workshop, no pretests are given, thus making it impossible to use this method. Participants are asked to provide a brief profile which helps organizers to identify leaders for the working groups into which participants are divided.

Hamilton (1976) points out three major weaknesses of the Comparative Approach in evaluating training. The first one is that in practice it is difficult to get adequate samples if participation is completely voluntary. The second factor has to do with the context. It is very difficult to exert control on the environment to ensure that both treatments are "pure". In practice, most work environments are subject to external factors beyond anyone's control. Measuring results is the third problem.

Management training involves conceptual skills and it is difficult to measure these. The evaluator has to decide which particular results to emphasize and which to play down.

### **The Objectives Model**

This approach involves carrying out evaluation by a form of "validation" of training. This involves determining whether or not objectives of the training program have been accomplished. Implicit in this approach is the assumption that training objectives are clearly stated. Hamilton (1976) gives four criticisms of this approach.

These are:

1. The need for the evaluation to relate all measures to the predetermined objectives may result in the evaluator trying to prevent any necessary modifications or innovations being introduced to the program as it unfolds.
2. Objectives can be very difficult to specify in measurable terms.
3. This kind of evaluation only pays attention to the *intended* outcomes of the program, whereas in practice some of the most important outcomes from programs may be incidental.
4. If the evaluation is based only on the objectives of that program it will be extremely difficult to compare the program's merits with those of other programs.

### **Goal Free Evaluation Approach**

This was a departure from the traditional approaches to evaluation already discussed. Michael Scriven(1972), who is the proponent of this approach, suggested that the evaluator should avoid determination of the formal goals and objectives of a program. Rather, she/he should spend time talking to participants and instructors, and observing what takes place before and after the training program. It is Scriven's argument that this approach ensures that the evaluator's judgement is not contaminated by those with vested interests. Deutscher (1976) goes further to suggest that formal goals are stated for a number of reasons, including that of attracting funding or participants. In this case goals would only represent part of what the instructor wants to achieve. According to Deustcher, a redefinition of the goals may be necessary. This could be done by involving all interested parties in discussing the goals they would like the program to serve. They will then have a wider base on which to judge the program. To avoid just looking for the outcomes expected by the interested parties, Deutscher advises the evaluator look specifically for unexpected outcomes. Deutscher is against the input-output approach, instead, he encourages the evaluator to look at the processes involved before, during and after the program.

### **Illuminative Evaluation Approach**

This approach was first outlined by Parlett and Hamilton in 1972 in a paper written for the Centre for Research in Educational Sciences, University of Edinburgh. The approach has a lot in common with goal-free evaluation but it is seen as an alternative to comparative evaluation. Parlett and Hamilton emphasize that the primary purpose of Illuminative Evaluation is as an aid to decision making even

though the evaluator's role is that of information gathering. The information gathered should be about the processes involved as opposed to the outcomes. Processes refer to the delivery of the training material. There are a number of ways of collecting information that Parlett and Hamilton suggest;

1. Observing what is going on without being unduly selective
2. Deciding which aspects to investigate further, and deeper
3. Attempting to explain why things observed are taking place.

This method has also been referred to as 'progressive focusing' and aims at ensuring that the more important facets of a program are investigated in some depth and that the less important aspects can be covered as quickly as possible. It is not the purpose of illuminative evaluation to demonstrate the *value* of a particular program unlike other approaches such as goal-free evaluation.

The preceding section reviewed several evaluation models. All the models reviewed are very specific in the problem they address. For example, the Illuminative Approach looks at the process or delivery of training, the Objectives Model assesses whether or not stated objectives were met, and the Comparative Model determines whether or not learning occurred. In the next sections, three more models are reviewed, and they are the models used in developing a model for this study. The models were chosen because they look at the whole training activity, from determining the need for training right up to the stage where outcomes of training result in changes at the organizational level.

## **The Management-Oriented Evaluation Approach - CIPP Model**

This model developed by Stufflebeam in 1966, generates questions about the Context (need), Input (design), Process (implementation), and Product (outcomes) of a program. The model is also known as the CIPP Model and has been used in many institutions in the United States: the Southwest Regional Educational Laboratory in Texas, the National Centre for Vocational and Technical Education, the U.S. Office of Education, and various school districts. It is based on the view that the most important purpose of evaluation is not to prove but to improve training. Information coming out of an evaluation would help identify strengths and weaknesses of a training program. Such information would then assist in necessary program modifications, hence the improvement function of evaluation. Stufflebeam did not look at his model as consisting of sequential steps, but rather types of evaluation that look at different aspects of training.

Context evaluation assesses goals by analyzing needs of a target group or institution, and assists planning decisions. The decisions that are required to specify what means are required to achieve a given set of goals, or a set of assessed needs, are considered during an input evaluation. Stufflebeam calls these structuring decisions, and proposed that they be serviced by input evaluation, which identifies and assesses the relative merits of alternative project designs. Process evaluation is the ongoing check on the implementation of a plan. The last type of evaluation, product evaluation, aims at measuring, interpreting, and judging the attainments of a program. Long term effects of a training activity should also be included in product evaluation.

Stufflebeam's evaluation model looked at different aspects of a training activity which are geared to serve information requirements of decision makers. He emphasized the improvement function of an evaluation, and his approach looked more into whether assessed needs were met. Because Stufflebeam focused on all these aspects of a training activity, his model was one of three models that were synthesized in coming up with a model for this study.

### **Brinkerhoff's Six Stage Evaluation Model**

Brinkerhoff (1988), a professor of educational leadership at Western Michigan University, criticised result oriented models and he specifically used Kirkpatrick's model as an example of an outcome oriented model. This type of model only looks for effects after the program has been implemented. In his book, Brinkerhoff suggests a six stage approach to evaluation of training. The stages are:

1. evaluation of needs and goals
2. evaluation of the program design
3. evaluation of program implementation
4. evaluation to determine if learning occurred
5. evaluation of application of new skills on the job
6. evaluation of the outcomes

Brinkerhoff discusses each of these stages in detail in separate chapters of his book, and in the last two chapters explains how to conduct comprehensive evaluation that incorporates all six stages of the model.

Stage 1 of Brinkerhoff's evaluation model looks at whether or not there is a problem worthwhile to address. This stage also determines whether HRD is the best solution for identified needs of the organization. It identifies who should receive HRD, and what skills they need. In stage 2, a workable program design is created by identifying the learning processes that will produce the needed skills and knowledge. Implementation of a workable program is conducted in stage 3, and evaluation involves what is happening and whether or not the design is being successfully implemented. Stage 4 is when recipients exit with new skills and knowledge. Trainees are evaluated in terms of who has and has not acquired skills and knowledge, what else they learned, and whether skills and knowledge are sufficient to enable on-job usage. In stage 5, skills and knowledge are assessed to determine which effects lasted, who is using new skills, which skills are being used, and how well they are being used. The final stage, stage 6, determines what benefits are occurring, and which ones are not. This stage also includes an evaluation of any problems occurring because of the new skills' use or nonuse. Decisions are made as to whether or not to continue, increase, or reduce HRD.

### **ISNAR Evaluation Model**

ISNAR has proposed a model for evaluating some of its training programs. This model was originally developed by Brethower and Rummler (1979) and later modified by Abe et.al. for ISNAR's Handbook for the Trainer (1990). Brethower and Rummler identified the four levels of evaluation as:

1. Do trainees like the training?
2. Do trainees learn from the training?

3. Do trainees use what they learn?
4. Does the organization benefit from the newly learned performance?

They use an evaluation matrix to evaluate these four levels by looking at what might be measured, the measurement dimensions, sources of data, and alternative data gathering methods.

The ISNAR Evaluation Model (Figure 1) by Abe et.al was an adaptation of Brethower and Rummler's model. ISNAR's conceptual model begins with the need to improve organizational performance and then it sequentially progresses through

Level 1 - provision of training

Level 2 - completion of training

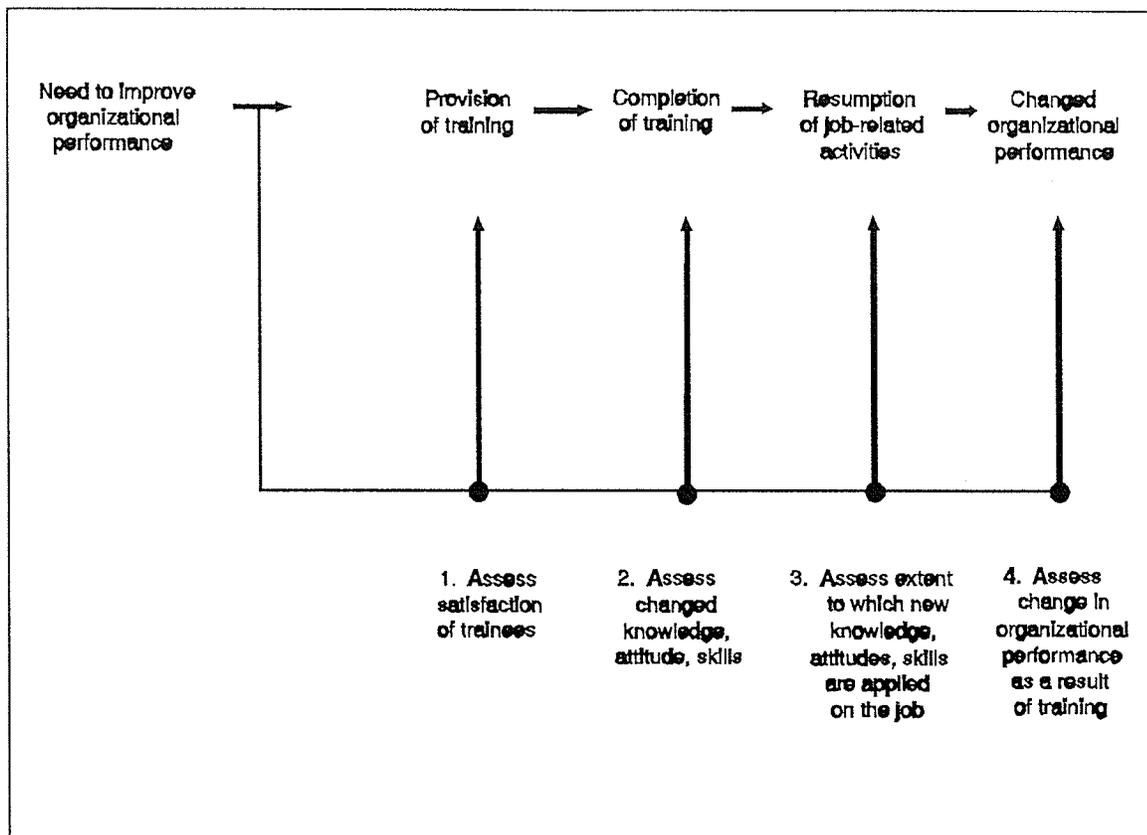
Level 3 - resumption of job-related activities

Level 4 - changed organizational performance

The model for this study was based on this framework but has six rather than four levels. This modification was made to encompass all aspects of a training activity.

## **Summary**

A number of models have been reviewed in this chapter. Most of these models only address parts of a training activity. This is because most evaluation models are designed to address a specific problem. The aim of this study was to come up with an evaluation model which looks at all the steps involved in a training activity. This was done so that the model could be used at the beginning of a training activity, during



**Figure 1** ISNAR Evaluation Model

one, and at the end. The model proposed was a synthesis of three of the models reviewed in this chapter; Brinkerhoff's six stage model, Stufflebeam's CIPP model, and ISNAR's Four Level Model. This work was conducted in conjunction with ISNAR training staff in the Hague, the Netherlands. A detailed description of the model is provided in chapter IV.

## CHAPTER III

### STRUCTURE AND SETTING OF THE PROGRAM

This chapter will provide details about the University of Manitoba Research Management Workshop. First, research management is defined and from this definition the Workshop content is discussed. The second section looks at the structure of the Workshop, followed by a description of the Workshop presenters and participants. Costs and monitoring and evaluation of the Workshop are discussed in the last two sections.

#### **Research Management**

Management is defined in the Webster dictionary as "the judicious use of means to accomplish an end." Downey and Trocke (1981) define management as, "The art of successfully pursuing desired results with the resources available to the organization." Management has also been defined in terms of its functions of planning, organizing, directing, monitoring and controlling. Research management is defined within this general framework of management. From these definitions of management, a logical definition of research management follows. Bourrier cited the definition for research management given by M.S. Swaminathan, former Director General of the International Rice Research Institute (IRRI) as, "The establishment of organizational objectives, the permanent monitoring of their validity, the identification and creation of opportunities for their achievement and the anticipation of problems associated with their definition and solution...(all) carried out through planning,

organizing, directing, monitoring and controlling decisions."<sup>4</sup> The conventional definition of management refers to management within the organization. In the University of Manitoba Workshop Manual this aspect of management is called micro-management. In the context of this workshop, research management includes micro- and macro-management. The approach proposes that research be considered in a broader context as a manageable activity which can be evaluated in terms of its contributions to the strategic goals and objectives of a country. Research management covers all of the managerial skills necessary for the conduct of the business of a research establishment.

### **Structure of the Workshop**

The University of Manitoba Research Management Workshop is made up of three related but self-contained modules:

Module I is the Role of Micro-Computers in Research Management and it is three days long. Participants are exposed to various software packages on wordprocessing, graphics, spreadsheets, statistical packages, and database packages. By giving them projects to work on, participants get hands on experience. There are also sessions on computer hardware concerning purchasing decisions.

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<sup>4</sup> Cited by G.R. Bourrier, Director, Fellowships and Awards, Division (IDRC) in Research Management Skills Workshop Manual, Edited by A. Loyns, J. MacMillan and E. Mupondwa, Department of Agricultural Economics, University of Manitoba, June 1990; Swaminathan, M.S. "Critical Elements in Managing Science and Technology for Development", Proceedings of the Panel of Specialists of the United Nations Advisory Committee on Science and Technology for Development, January 8-11, 1983.

Module II is called, General Principles and Practices of Management in the African Setting. Presenters in this module focus on management in an African environment using case studies and real work experiences. Some of the topics covered in module II include; a) Management in Africa versus in the West b) Managing Structural adjustment c) Mechanics of Management

Module III is titled, Requirements for Effective Research Management. Topics include; (a) International research network (b) Managing the research environment (c) Project proposal writing (d) Monitoring and evaluation. Modules II and III are one week long each. Appendix 1 provides the 1991 Workshop Schedule.

During the entire workshop period, participants work on three case studies that allow them to utilize information provided in the three modules in a cumulative fashion that reinforces learning.

### **Presenters/Facilitators**

Workshop organizers invite presenters who have both experience with research institutes in Africa and experience relevant to the workshop curricula. Instructors and speakers are drawn from inside and outside the University of Manitoba. For example some of the presenters include; Howard Elliott, Deputy Director General for the International Service for National Agriculture Research (ISNAR); Moses Kiggundu, author, consultant for CIDA, IDRC and the World Bank, and Associate Professor, School of Business, Carleton University; John Loxley, University of Manitoba professor in Development Economics; Alex McCalla Chairman for the

Technical Advisory Committee for the Consultative Group for International Agricultural Research (CGIAR); and, Diana McLean, consultant for CIDA and IDRC. Because of limited resources, most of these presenters are already in North America. Most of the key presenters have been involved with the workshop for at least three years or more. Participants evaluate all the sessions and these evaluations are summed up, tabulated and circulated among the different presenters. Workshop organizers have actively excluded low performers from future workshops. The distribution of evaluation results to presenters provides feedback on which they can act to improve their presentations.

### **Participants**

This Workshop is targeted primarily at African graduate students studying in Canada. It is intended that the rest of the participants get a chance to share ideas with people who have hands on experience in an environment similar to the one in which they may eventually work.

Workshop organizers invite at least two people who are working in research institutes in Africa to attend the Workshop. One or two participants from other developing countries may also be invited to attend the Workshop. For example, in 1988, one participant was a visiting professor from China, acting as a special observer. In 1991, two of the participants were from Costa Rica.

The Workshops are held during the summer and last for two and one half weeks. Requests are sent to department heads in the different universities who are

asked to recommend graduate students who are in their final year of study. The Workshop has been designed for twenty five participants. Preference is given to students who are in agriculture and related fields. Participants have come from various disciplines such as Economics, Geography, Education, Agricultural Economics, Plant Science and Animal Science, at both masters and doctorate levels. Organizers believe that a heterogenous group allows more breadth in discussions and in the way management problems are solved. On the other hand, they also acknowledge that it is not possible to be too specific when dealing with a heterogenous group. However, their aim is to teach research management at a basic enough level to allow generalities that can accommodate various disciplines. Table I shows the disciplines of the Workshop participants.

### **Costs of the Workshop**

There are costs involved in providing these Research Management Workshops. The costs can be broken down into two main categories, training costs, and the opportunity cost to the participants. Training costs include salaries, honoraria, travel and accommodation for presenters, support services etc. Table II shows the basic training costs for the years 1987 to 1991. The figures in the table exclude participant travel and accommodation costs because these costs change from year to year depending on the ratio of local participants to participants from outside Winnipeg. Travel and accommodation costs for participants are shown in Table III. All the figures are nominal values (inflation is not taken into account).

**Table I** Disciplines of Workshop Participants

| DISCIPLINE       | # OF PARTICIPANTS | DISCIPLINE    | # OF PARTICIPANTS |
|------------------|-------------------|---------------|-------------------|
| Agric. Economics | 15                | Forestry      | 2                 |
| Plant Science    | 12                | Management    | 1                 |
| Economics        | 8                 | Chemistry     | 1                 |
| Animal Science   | 8                 | Criminology   | 1                 |
| Geography        | 7                 | Communication | 1                 |
| Soil Science     | 7                 | Statistics    | 1                 |
| Food Science     | 6                 | Agriculture   | 1                 |
| Education        | 5                 | Biology       | 1                 |
| Entomology       | 4                 | Health Admin. | 1                 |
| Sociology        | 3                 | Law           | 1                 |
| Environ. Science | 3                 | Pathology     | 1                 |
| Geology          | 3                 | Pol. Science  | 1                 |
| Resource Econ.   | 2                 | Engineering   | 1                 |
| Public Admin.    | 2                 | AgriBusiness  | 1                 |
| Info. Science    | 2                 |               |                   |

Source: 1987 to 1991 Workshop Summaries

The training cost per participant is the total training cost divided by the number of participants for a particular year. This cost per head is the number that could be used in comparing the cost of the Workshop to that of similar programs. A few organizations who provide similar training were contacted and asked to provide information on the cost of their programs but none of them responded in time for the information to be incorporated in the study. The aim was to compare costs of the workshop with costs of other similar programs. There was, therefore, no further attempt to compare costs with other programs in this study. Given more time and

**Table II** Training Costs

| Year | Total Training cost* \$ | Cost per participant \$ |
|------|-------------------------|-------------------------|
| 1988 | 58,296.88               | 3,238.71                |
| 1989 | 53,845.77               | 2,447.54                |
| 1990 | 52,729.82               | 2,304.45                |
| 1991 | 58,001.69               | 2,521.81                |

\*Training costs exclude participant travel and accommodation

Source: Workshop budget figures provided by the organizers.

resources, this could be done and would provide useful descriptive data for assessing cost effectiveness of the program.

Travel and accommodation costs vary from year to year depending on how many participants come from outside Winnipeg. The more University of Manitoba students who attend the Workshop, the less the travel and accommodation costs, because all local students stay in their homes during the Workshop.

**Table III** Travel and Accommodation Costs

| Year | Cost of travel and accommodation<br>\$ | Number of students from outside Winnipeg | Cost per student |
|------|----------------------------------------|------------------------------------------|------------------|
| 1988 | 10,758.78                              | 10                                       | 1,075.88         |
| 1989 | 22,345.00                              | 18                                       | 1241.38          |
| 1990 | 27,621.09                              | 15                                       | 1841.41          |
| 1991 | 15,064.54                              | 10                                       | 1506.30          |

Source: Workshop budget figures provided by the organizers.

The other cost consideration is opportunity cost of attending the Workshop to participants. It is not reflected in the table. The opportunity costs to participants include any activities that participants forego in order to attend the Workshop. Since the Workshop is held in the summer, some research scientists are conducting their experiments at this time. Some invited students have had to decline attending because of their research programs. Those who attend may have to pay someone to take care of their experiments during their absence. Other participants would normally take summer courses, go home (Africa), get summer jobs, or just take time to relax. Although there was no effort to determine the value of this cost in money terms, it was important to draw attention to alternative activities because they represent some foregone opportunity. However, in the context of three to six year graduate program in Canada, the 20 days spent on the Workshop represents less than 2% of the student's total time in Canada. Assessed this way, this component of cost would be very small.

## **Monitoring and Evaluation of the Workshop**

There is no ex-ante evaluation conducted by the organizers, except for the profile questionnaire mailed out several weeks before the Workshop to determine the management experience of participants. This process also helps in identifying group leaders for the participants' working groups during the Workshop.

During the Workshop, participants are asked to evaluate each session by rating various aspects of the sessions. They are asked to evaluate each session on content, presentation, and the instructor. At the end of each module, participants are asked to give an overall evaluation. On the last day of the Workshop, the last session is an overall evaluation of the Workshop. This session is facilitated by the steering committee and participants are encouraged to write down any comments they might have with regard to the Workshop. All these evaluations, that is, session, module, and overall Workshop evaluations, are reported in the Workshop summary report produced after each Workshop.

## CHAPTER IV

### EVALUATION MODEL

This chapter provides a description of how the proposed evaluation model was developed. The model is a synthesis of three of the models reviewed in chapter II, the CIPP Model, Brinkerhoff's Six Stage Model, and ISNAR's Four Level Evaluation Model.

#### **The Evaluation Model**

The need for an effective evaluation model stems from the recognition that allocation of resources (often times scarce) to training must be justified. In reviewing the training evaluation literature it became apparent that most evaluation models are created for a specific purpose. Most of the models reviewed, therefore, did not address all aspects of a training activity. In order to do this, it became necessary to borrow parts of different models in an effort to come up with a model that would cover all aspects of training. Three of the models that were reviewed were incorporated to produce the model for this study (Figure 2). These were, Stufflebeam's CIPP model (1966), Brinkerhoff's six stage model (1988), and the ISNAR model developed by Abe et.al. Table IV gives a summary of the various stages for each of these three models.

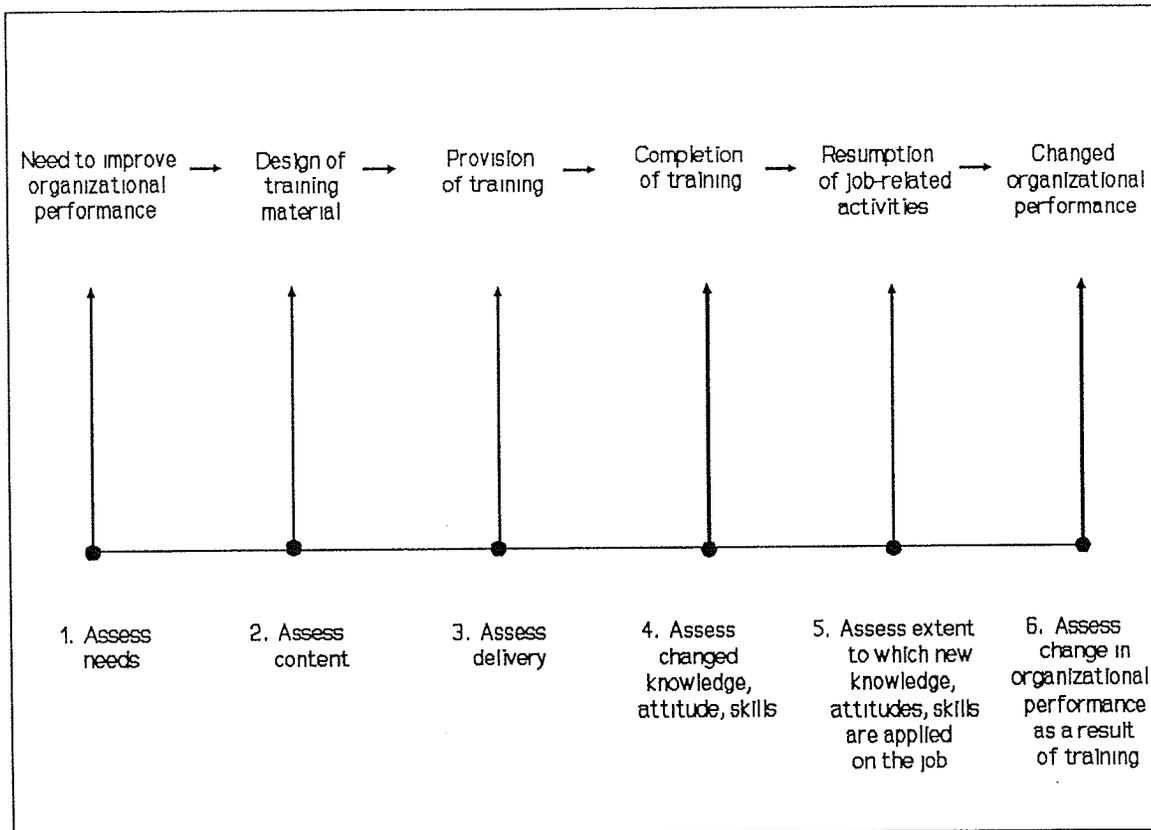
There are similarities to the three models. ISNAR takes the need to improve organizational performance as a given and progresses through the provision of training (level 1), the completion of training (Level 2), the resumption of job-related activities (Level 3), and changed organizational performance (Level 4). The CIPP

**Table IV** Summary of the Three Models used in the Study, and Stages of Each

| S<br>T<br>A<br>G<br>E<br>S<br><br>O<br>F<br><br>T<br>R<br>A<br>I<br>N<br>I<br>N<br>G | MODELS  |                                      |                                      |
|--------------------------------------------------------------------------------------|---------|--------------------------------------|--------------------------------------|
|                                                                                      | CIPP    | ISNAR Model                          | Brinkerhoff's Six Stage Model        |
|                                                                                      | Context |                                      | Needs and Goals                      |
|                                                                                      | Input   | Provision of Training                | Program Design                       |
|                                                                                      | Process |                                      | Program Implementation               |
|                                                                                      | Product | Completion of Training               | Determine if Learning Occurred       |
|                                                                                      |         | Resumption of Job-Related Activities | Application of New Skills on the Job |
|                                                                                      |         | Change in Organizational Performance | Outcomes                             |

model, looks at the needs and goals of an organization as the Context, development of training material as Input, delivery of training as the Process, and finally the outcomes as the Product. Brinkerhoff encompasses all these stages but in a more elaborate manner. He breaks down the product into three steps (i) determine whether learning has occurred, (ii) application of skills on the job (iii) outcomes at organizational level.

The model for this study has the ISNAR format but synthesizes the other two models (CIPP and Brinkerhoff's model) to include six stages (Fig. 2). These are; (1) need to improve organizational performance, (2) design of training material, (3) provision of training, (4) completion of training, (5) resumption of job-related



**Figure 2** The Evaluation Model

activities, and (6) change in organizational performance. Conceptually, evaluation can be conducted at one or more of these stages. The more stages evaluated, the more comprehensive the evaluation and presumably, the more information gained. A detailed description of the levels of evaluation models follows in the next six sections.

### **Level 1: Assessing Needs**

The primary focus of this stage is to identify the strengths and weaknesses of an institution or program for which improvement is sought through training, that is, establish the need for which training is applied. Goals and objectives of training are then set based on identified needs. In many cases, goals are tailored to suit the mandate of the organization, donor or whoever is funding the activity. An evaluation

at this stage examines the importance of assessed needs and forecasts whether or not the proposed program is worthwhile. This can be done internally by management going back to the drawing board and taking a fresh look at institutional needs and comparing their conclusions to those outlined in the training prospectus. A different approach would be to invite an outsider (consultant) not biased by association with the institution, to assess the needs of the institution. Using questionnaires and interviews, surveys of the people affected by training can be conducted to determine their ideas on human resource needs. A review of documents, for example, national development plans, strategic plans for organizations and annual reports can be used in conjunction with seminars and workshops to evaluate needs.

This stage also projects the contribution of training and compares that to alternative uses of the resources.

## **Level 2: Assessing Content**

This stage involves the development of a program design. Evaluation of this stage includes assessing a given design's practicality, theoretical soundness, and responsiveness or the relative merits of competing alternatives (Brinkerhoff, 1987). Evaluation at this stage will determine whether or not a program can be implemented. Technical expertise can be used through peer review, and a review of literature to evaluate the content of the training material. The material can also be compared to similar modules in other training activities. Other methods of evaluation include panels, checklists, site visits, pilot tests and participant review. Because a lot of training is done by technical people, it is important to involve education experts

during the evaluation. Education experts are there to ensure that the material is presented at the right pace and level. Material should not only cover all critical aspects of the topic, but should be broken down into components small enough for the trainee to comprehend.

A certain amount of Level 2 evaluation is conducted during the University of Manitoba Research Management Workshop. Participants are asked to evaluate each session on content and delivery. At the end of each module, there is an overall evaluation.

### **Level 3: Assessing Delivery**

Assuming that material design is appropriate, this stage assesses whether the design is being delivered effectively. Trainees can also provide feedback at this stage which may indicate changes required in the previous stage (material design). The best material can be wasted if delivery is poor, therefore this is an important stage in the training process.

A practical method of assessing this phase is to carry out on-going evaluations during training using evaluation forms. The format of the form can vary but it is important to make it comprehensive and yet simple. Participants may be asked to fill out questionnaires during the course or at the end depending on the range of material covered and the course length. For example, at the University of Manitoba Research Management Workshop, participants are asked to evaluate each session. The questions on the evaluation form focus on the presenter in terms of organization,

voice projection, knowledge, availability for questions, teaching methods, and how much participation is allowed. There are also questions regarding teaching aids such as handouts, overheads, and videos.

Trainees may also be asked to take tests and work on projects or case studies during and after the course. This not only provides an indication of how much learning has occurred by giving trainees an opportunity to apply what they have learned, but also reinforces learning. Another form of evaluating delivery is by observation. This requires the evaluator to sit in the training sessions. One disadvantage of this technique is that the observer can make both the presenter and the trainees nervous.

#### **Level 4: Assessing Changed Knowledge**

At the end of the course an evaluation may look at immediate outcomes. Here the focus is on "learning criteria" which includes increased knowledge, acquired skills, and changed attitudes due to training. Pre- and post-test results can be used to assess changes that occurred as a result of training. A final questionnaire, followed by discussion and interviews with trainees may provide information on the participants' expectations regarding implementation when they get home. There has been no attempt by the organizers at the University of Manitoba to determine whether or not learning has occurred because it has been judged infeasible within the resources available to the Workshop.

## **Level 5: Assessing Extent to Which New Skills are Applied**

This level assesses the extent to which new knowledge, attitudes, and skills are applied on the job. Usually a period is allowed, six months to a year after resumption of job activities before doing an evaluation. For a program like the Research Management Workshop, the impact is likely to be distributed over a longer time and would include contribution to career paths if successful. The evaluator seeks answers to a number of questions; Who uses the training? What aspects of the training are being used? How is the training being used? When and where is the training being used? Are there any other unexpected applications of the training? How well is the training being applied? Do trainees feel more confident and better equipped? To obtain information that addresses these questions, follow-up studies can be done by conducting surveys through questionnaires and interviews. Mailed questionnaires can have the disadvantage of a low response rate, but this can be improved by preparing trainees for follow up studies during the course, by preparing short clear questionnaires, by avoiding personal information as much as possible, by including a personalized cover letter, and by providing for prepaid return. Employers usually cooperate in providing their own evaluation of the trainee and in making performance appraisal data available. In the case where supervisors themselves have gone through training, the quality of the data can indicate on-job changes. For this study, supervisors were not involved because of resource and time constraints.

The questionnaire that was developed for this study addressed Level 5 evaluation by addressing the key topics covered in the study. Respondents had to show on a scale of one to five, how useful each topic was to their present work

situation. The researcher went a step further during the interviews by asking respondents to describe their work environment, including the type of constraints they face. This provided an explanation as to why some tools or skills were found to be more useful than others.

### **Level 6: Assessing Change in Organizational Performance**

Training is assessed in terms of changes in organizational performance. This is the most complex level, because other factors affect organizational performance. Such factors include organizational policies, performance of other employers, and availability of resources. Several procedures can be applied to evaluate this final level; organizational audits, performance analysis, observation, surveys, document reviews and hearings, and cost-benefit comparisons.

Level 6 evaluation is the most difficult to conduct because of problems of attribution, and length of time to achieve results. A starting point for evaluating this level is to ask respondents to cite specific incidents where they applied skills from the Workshop, and trace the consequences of their actions. In this study, respondents gave examples of where a tool or skill was used (this was part of the interviews). However, it was hard to attribute results to the Workshop because respondents already possessed the skill at the time of the Workshop. Determining impact is complicated by the fact that the flow from the achievement of the immediate outcomes to their eventual impact on national goals normally consists of a linked chain of many specific events. A second complexity that cannot be ignored is that the participant is obviously not the only player in his/her work environment. Other elements (people,

laws, customs, etc.) interact with the things that he/she does or tries to do (see Fig.3). The result of these external influences can be to transmit, increase, decrease, or block the impact of the participant's action (Felker and Krug, 1987). There is therefore a tug-of-war between the two basic requirements that have to be met in impact assessment, of not only identifying the *contributions* that have been made to national goals, but of also *attributing* these contributions to a specified input, such as participant training. All the interviewees said that they had some prior knowledge of the tools that were taught in the Workshop. These skills had been learnt either in past jobs or during their graduate program. They did admit that the Workshop added or sharpened their knowledge of certain topics. It was therefore hard to isolate benefits of the Workshop given these factors.

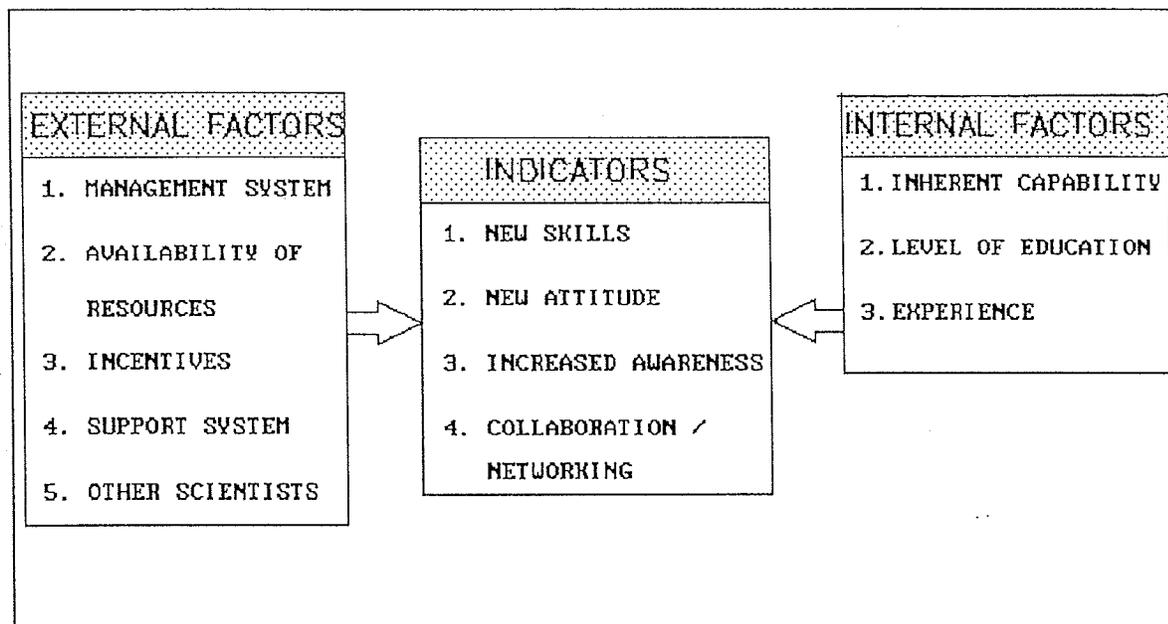


Figure 3 Performance Indicators

### Evaluation of the IDRC Workshop

An evaluation has a focus that will determine the particular questions which it will seek to answer. In applying the proposed model on the IDRC Research

Management Workshop, focus was on Level 5 of the evaluation model. This level assesses the extent to which new knowledge, attitudes and skills are applied on the job. Aspects of the first three levels of the model were also included in the evaluation since the stages are 'nested' in each other. One level impacts on the other and vice versa. The focus of the evaluation determined the design of the survey tool, the data to be collected, and the method of collection. In order to obtain specific information, specific questions had to be asked. These questions further defined and operationalized the evaluation purpose, and served as the direct "objectives" of the evaluation effort.

There was an attempt to partially conduct Level 6 evaluation (Assessing Change in Organizational Behaviour). Because the derivation of specific indicators is complicated by the fact that the flow from the achievement of the immediate outcomes to their eventual impact on national goals normally consists of a linked chain of many events, no conclusive results were drawn from the survey. A second complexity that could not be ignored was that the participant is obviously not the only player in his/her work environment. Other elements (people, laws, customs, etc.) interact with the things that he/she tries to do (see Figure 3).

### **Method: Questionnaires and Interviews**

In using this method of collecting information, a number of factors have to be taken into account. Cannel and Kahn (1968) have defined the interview as a conversation with a purpose, specifically the purpose of procuring information. According to Cannel and Kahn, the basic theme behind good questionnaire or

interview schedule construction is based on the formulation of questions that give "maximum opportunity for complete and accurate communication of ideas between the researcher (or interviewer) and the respondent." Because most words can be interpreted differently, it is necessary to pretest questions in order to see if the researcher's and respondent's frames of reference correspond. If they do not, changes in the wording of the question will be necessary.

Bailey (1987) suggests that in constructing a questionnaire, the questions must be relevant in three key areas: (1) relevance of the study's goals; (2) relevance of questions to the goals of the study; and (3) relevance of the questions to the individual respondent. The first point refers to the purpose/goal of the study. It is important to make this known to the respondent and this is usually done by including a cover letter with the questionnaire. Once the purpose/goal of the study is made clear to the respondent, the questions on the questionnaire must be clearly related to the stated goal of the study. The third point is important in ensuring that the respondent's time is not wasted by asking questions that are not relevant to him/her.

Both the open-ended and closed-ended question designs will be used. An open ended question is a question that leaves the respondent free to respond in a relatively unrestricted manner. By contrast, a closed-ended question restricts choice of response by forcing the respondent to answer in terms of given categories or alternatives (Smith, 1981). Cannel and Kahn list five considerations in choosing between the open and closed question formats: (1) interview objectives, (2) respondent information level, (3) structure of respondent opinions, (4) respondent motivation to communicate, and

(5) initial interviewer knowledge of the preceding respondent characteristics. Few good questionnaires or schedules use only open- or closed-ended question formats. Various combinations of each type will normally be present since the researcher is usually interested in a number of different variables, each of which may call for varying question formats. When addressing a complex issue, it is advisable to use a battery of questions in preference to a single question which may be misunderstood. Evidence shows that reliability increases with an increase in indicators.

Researchers have identified a number of scientific disadvantages of survey methods and these need to be borne in mind when one is carrying out research. They are open to memory and viewpoint biases. Memory decay is greater with (1) more elapsed time since the event, (2) lesser occurrence of the event, (3) relative unimportance of the event, (4) stronger connection of the question to a person's self-esteem, and (5) less accessibility of relevant data. Thus, many data are unavailable to the researcher since respondents often cannot recall events or misrecall various events. The main strength of survey methods is that they are often the sole method of retrieving information about a respondent's perceptions. Within the framework and resources of this study, this latter point was definitely true, and this was why the original study was to develop a conceptual evaluation model only. However, having developed the model (Fig. 3), and given the opportunity to conduct some testing of the model through support provided by ISNAR, the study was extended to include a small but useful empirical dimension.

## Guiding Questions for the Evaluation

Using the model (Fig.2), a questionnaire was developed which included some key questions. With the help of ISNAR staff in the Hague, a questionnaire was developed as the survey instrument. The questions which guided the development of the questionnaire are listed below.

1. *Did the needs assessment correctly identify training needs?* The University of Manitoba provides a Research Management Workshop. The assumption is that participants will be involved in research management on returning to their homes therefore they need training in that area. Is this assessment correct? The study will try to address this question by finding out the kind of work ex-participants are actually involved in once they return to their home countries. Obviously, if the assumption is wrong, some or all of the workshop material and delivery may be misdirected. Similarly, stated objectives of the Workshop could be wrong, hence the next question which the study sought to answer,

2. *Are the objectives of the Workshop correct?* Once a need has been identified, a number of solutions to the problem may exist. This question addresses the issue of how far the Workshop objectives reflect assessed needs. Objectives may or may not have anything to do with identified needs. For example, should computer awareness be an objective of the Workshop or do participants already have enough computer knowledge gained during their graduate studies for what their work entails? Should the objective of the Workshop be to provide an overview of management skills or should they concentrate on a few key areas that are most useful in an African context? The next step was to find out,

3. *How good was the training content?* The material for the Workshop is developed by the organizers and the presenters. Most of this material is provided in the Workshop manual with some handouts given to participants during presentations. Content was assessed in terms of its relevance to the African context. In looking at the next stage, the question asked was,

4. *Is the training content being delivered and received as intended?* Participants were questioned regarding what they learned from the Workshop. This was measured against what the trainers were trying to deliver. It may not be easy to obtain this kind of information especially from participants who took the course five years ago and may have forgotten what they learned from the Workshop. Assuming that participants did learn something from the Workshop, the study then asked,

5. *Are the skills sought to be developed relevant to subsequent work assignments?*

Again, a survey of the tasks that participants are actually involved in provided information that was needed to answer this question. Skills covered in the Workshop include, budgeting, planning, logical framework, proposal writing, and computer application in research. It is possible that any computer training at this level of participant experience is redundant. The computer module uses three days of training time directly, and additional working time in the other modules. The study also wanted to find out,

6. *Which parts of the training are more useful than others?* Participants were asked to rate the various topics covered in the Workshop according to usefulness to their

current work. This helped answer the whole question of relevance of the Workshop to the African context. Given that the survey was conducted at least a year after the last Workshop, participants had an opportunity to use their new knowledge. Imparting networking skills to participants was one of the stated objectives of the Workshop, hence the study also sought to answer,

*7. Have the participants kept in touch with either the Workshop organizers, presenters or other participants?* Since networking is one of the objectives of the Workshop, it was useful to find out what networking skills were learned and how they are being used.

### **Development of the Questionnaire**

Using the 7 questions as a guide, a survey questionnaire was designed. The sequence of questions on the questionnaire did not follow that of the model. Structuring of the questions was mainly dictated by the method of analysis that would be used. For example, questions regarding content, delivery, and usefulness to work were all asked in one section because the scale of responses was the same. Not all the aspects of the model were reflected in the questionnaire. A model is only a guide, and depending on the problem being addressed, the specific format of the actual tool being used can vary. For example, Level 6, impact at the organizational level, was not addressed because of the attribution problem. Level 4, which evaluates whether or not learning occurred was excluded because no pre-tests were conducted prior to the Workshop.

During the development of the questionnaire, drafts were distributed to several members of ISNAR staff for comments and suggestions. A draft of the questionnaire was tested on a group of 20 students at the University in Wageningen, the Netherlands. This group consisted of mid-career people from developed and developing countries attending a nine month course which has a management component. Testing on this group was done mainly because of the proximity of Wageningen to the Hague where the researcher was based during questionnaire development. Another reason for using the Wageningen group was that they did not form part of the sample for the actual study but they were similar in that they were international students.

A trip was made to Wageningen to administer the draft questionnaire to the testing group. A sample of the questionnaire cover letter and the questionnaire are provided in Appendices 2 and 3 respectively. Each participant in the field test was given a draft questionnaire with an attached cover letter explaining the purpose of the exercise. In addition, the cover letter outlined what was expected of them in completing the questionnaire. This included the following:

- a) read through and edit the questionnaire
- b) complete the questionnaire, and
- c) react to the response pattern
- d) react to the general content of the questionnaire
- e) comment on the format of the questions/statements
- f) indicate the time taken to complete the questionnaire.

Although some of the questions on the questionnaire were specific to the University of Manitoba Workshop, respondents were still able to make useful comments regarding clarity of the questions. At this stage, the draft questionnaire was reviewed and commented on by Workshop organizers at the University of Manitoba. There was further revision of the questionnaire based on the suggestions and comments made by the test group and by several ISNAR staff. The final questionnaire was three pages long and it was divided into 2 sections, A, and B. Section A focused on the participant's profile, section B on general aspects of the Workshop, and specific topics covered during the Workshop (see Appendix 3).

#### **Data: Collection and Analysis**

There were a number of factors that were taken into consideration in determining the data gathering technique. Besides the needs of the research, two main factors were determinants, costs involved and the amount of time that the researcher had for completing the study. As was mentioned in the introduction, the original purpose of the study was to develop a framework for evaluating management training. However, a limited amount of money provided by ISNAR made it possible to extend the study to the testing stage. Because funds were limited, the main data gathering technique was through mailed questionnaires, and a few interviews.

Only a sample of the participants could be interviewed in person. Zambia and Kenya were picked for the interviews because a third of all the Workshop participants who have attended the Workshop are from these two countries. Within these two

countries, all the participants who were available were interviewed. A few people could not be interviewed because they were travelling at the time of the study.

A set of questions was developed to guide the interview. There was enough flexibility to allow emphasis on what the interviewee considered to be important issues. The researcher also pursued leads in individual interviews. The researcher wanted to get at several issues which included: (a) specific incidents or circumstances where participants use/used skills learned during the Workshop, (b) constraints that participants face in their work situations. These issues were addressed in order to help understand why the Workshop would be deemed relevant or not. Interviewing participants in their work environment also gave the evaluator an opportunity to observe and obtain information that would otherwise be unavailable through mailed questionnaires.

Some 39 questionnaires were mailed out at the end of March 1992 to Workshop graduates who could not be interviewed in person. In addition, thirteen Workshop graduates from Kenya and Zambia were interviewed at their institutes by the researcher from April 12 to April 25, 1992. Results from the interviews and the mailed questionnaires are provided in the next chapter.

## CHAPTER V

### FINDINGS OF THE STUDY AND RECOMMENDATIONS

Data from questionnaires and interviews will be analyzed in this chapter. Both qualitative and quantitative data will be analyzed and various methods will be used for describing the results. Findings of the study are summarized in the form of bar graphs and pie charts.

#### **Fieldwork Adjustments**

A visit was made to Kenya and Zambia between April 12th and April 25th. The first problem encountered was that the sample size was much smaller than anticipated. Only eight people were available in Zambia for interviews instead of the anticipated thirteen. Two people settled in Canada upon completion of their studies, one person was attending a conference, and two people were on field trips. The eight available people were ready for the interviews but no set times were given for the interviews because of the unreliability of transport. Although a vehicle had been rented, car rentals in Zambia provide a driver who is not always reliable. There were no times set for the interviews, but interviewees had been contacted beforehand and were expecting to be interviewed during the week of April 12th to the 17th, 1992. Ten trips had to be made from where the researcher was staying to the University of Zambia to interview the four people who work there. This was because participants were not always in their offices and it was not possible to call ahead since there were no telephones in their offices.

In Kenya, there was also a problem of the sample size. Five out of the anticipated eight people were available for interviews. One person settled in Canada on completing his studies, and two were on field trips. Interviews had been scheduled two weeks ahead of time and all five interviews went according to plan.

Participants completed the questionnaire during the first part of the interview. It took about half an hour to complete the questionnaire. Some of them first completed the questionnaire and then verbally elaborated on their responses. Others made verbal comments as they filled out the questionnaire.

There were advantages and disadvantages to using the interview time for completing the questionnaire. The main advantage was that the respondents could clarify any parts they did not understand. Second, completing the questionnaire during the interview helped refresh their memories of the Workshop. Third, the researcher received the completed questionnaire immediately. The disadvantage was that it took time to complete the questionnaire (about thirty minutes). Interviews took about one hour each. A tape recorder was used and the researcher also made notes during the interview.

### **Results of the Study**

The size of the population, that is, number of people who went through the Workshop between 1987 and 1991, was 102. Out of these 102 participants, 52 returned to their home countries, and 50 were still studying in Canada at the time of the study. The 52 people who returned to Africa, formed the sample for the study.

Each one of these returnees received a questionnaire, 39 of them by mail, and 13 of them when they were interviewed. The mailed questionnaires were sent out at the end of March, 1992. By August 1st, 1992, 15 questionnaires had been returned. Returned questionnaires represent 38% of those mailed out. Because the sample was small, mailed and interview questionnaires were analyzed together. Discussions from the interviews were analyzed separately however. Out of the sample, 3 people attended the Workshop in 1987, 4 people in 1988, 11 people in 1989, 8 people in 1990, and 2 people in 1991. Some 13 of these participants were PhD graduates, and the rest (15) were MSc graduates. Countries represented included Zambia, Kenya, Tanzania, Ghana, Senegal, Mali, Nigeria, Benin, Lesotho, and Ethiopia. Table V shows a summary of these statistics.

The next four sections are from questions on the questionnaire which dealt with matching the Workshop program with research-related work. This stems from the organizer's assumption that most of the participants go back to their countries and work in research institutes or institutes with a significant research component.

### **Type of Organization**

Respondents were asked to indicate the type of organization they work for by choosing from a list of five categories. Universities and government each employed 42.9% of the respondents. The rest of the respondents were in parastatals (7%), Non Governmental Organizations (NGOs) (3.6%), and 3.6% said they were in other types of organizations (Figure 4). Over 80% of the respondents were working for universities and government. This fits in with the Workshop

**Table V** Sample Profile

| YEAR ATTENDED | DEGREE | DISCIPLINE     | GENDER | COUNTRY  |
|---------------|--------|----------------|--------|----------|
| 1987          | PhD    | Agric Econ     | M      | Zambia   |
|               | PhD    | Animal Science | M      | Zambia   |
|               | PhD    | Plant Science  | M      | Zambia   |
| 1988          | MSc    | Agronomy       | M      | Ethiopia |
|               | MA     | Geography      | M      | Tanzania |
|               | MSc    | Plant Science  | M      | Zambia   |
|               | PhD    | Plant Science  | M      | Zambia   |
| 1989          | PhD    | Agric. Econ    | F      | Lesotho  |
|               | PhD    | Pathology      | M      | Kenya    |
|               | PhD    | Management     | M      | Senegal  |
|               | MSc    | Economics      | M      | Ghana    |
|               | PhD    | Agric. Econ    | M      | Kenya    |
|               | MSc    | Agric. Econ    | M      | Zambia   |
|               | MSc    | Geography      | M      | Ghana    |
|               | MSc    | Agric. Econ    | M      | Zambia   |
|               | MA     | Health         | M      | Mali     |
|               | LLM    | Law            | F      | Tanzania |
|               | PhD    | Geography      | M      | Kenya    |
| 1990          | MSc    | Plant Science  | M      | Kenya    |
|               | MA     | Human Ecolo    | F      | Lesotho  |
|               | PhD    | Education      | M      | Tanzania |
|               | MA     | Geography      | M      | Nigeria  |
|               | MSc    | Economics      | M      | Senegal  |
|               | PhD    | Education      | M      | Kenya    |
|               | PhD    | Nutrition      | M      | Kenya    |
|               | MSc    | Economics      | M      | Benin    |
| 1991          | PhD    | Agronomy       | M      | Tanzania |
|               | MSc    | Agric. Econ    | M      | Zambia   |

Source: 28 Questionnaire Responses

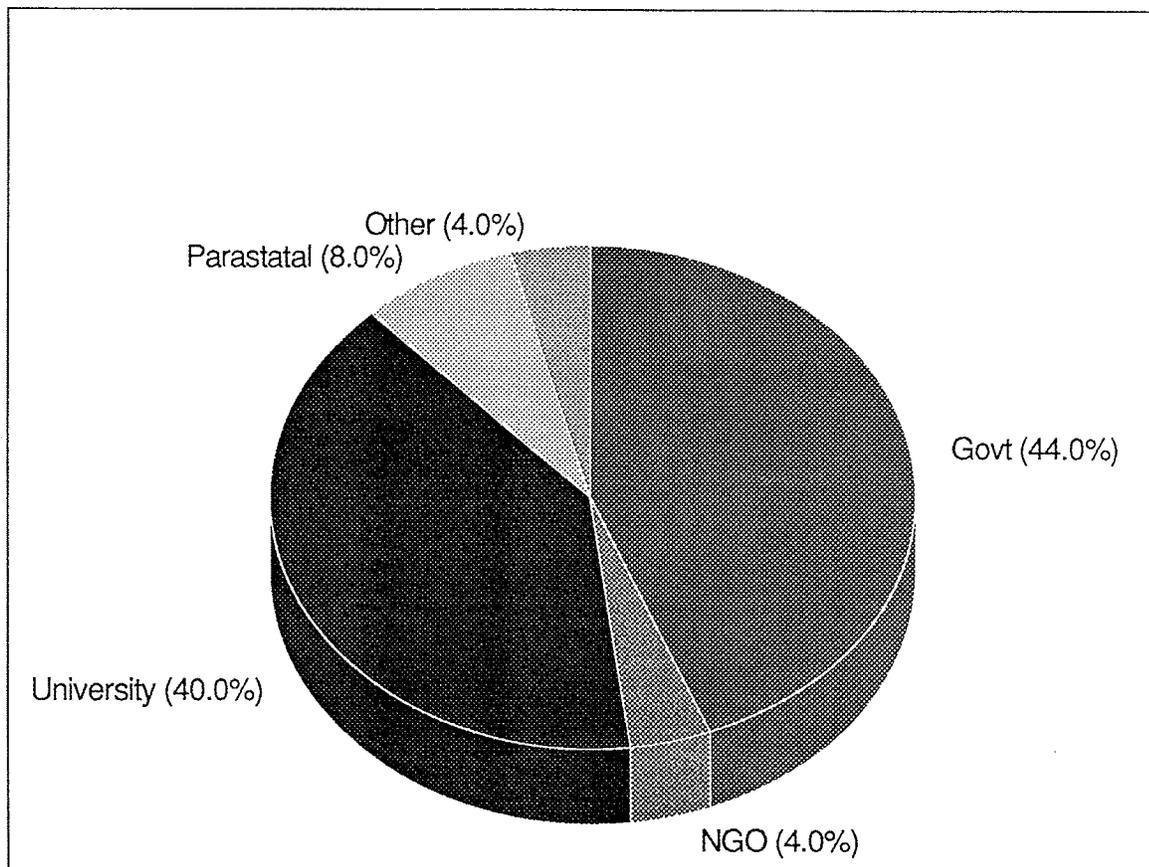
organizers' assumption that most Workshop participants go back to work in research or research related work. This assumption is further confirmed in the next section which addresses the question of what type of activity respondents' organizations are involved in.

### **Main Activity of Organization**

Respondents were asked to indicate the main activity of their organization. Some checked off more than one activity, for example, in the case of universities, research and teaching were checked off. All the activities were included and their proportions in relation to all other activities calculated. Research was said to be the main activity of 39% of the organizations, teaching accounted for 28% of the organizations, 16% of the organizations were mainly involved in development, policy 10%, and extension 6% (Figure 5).

### **Position**

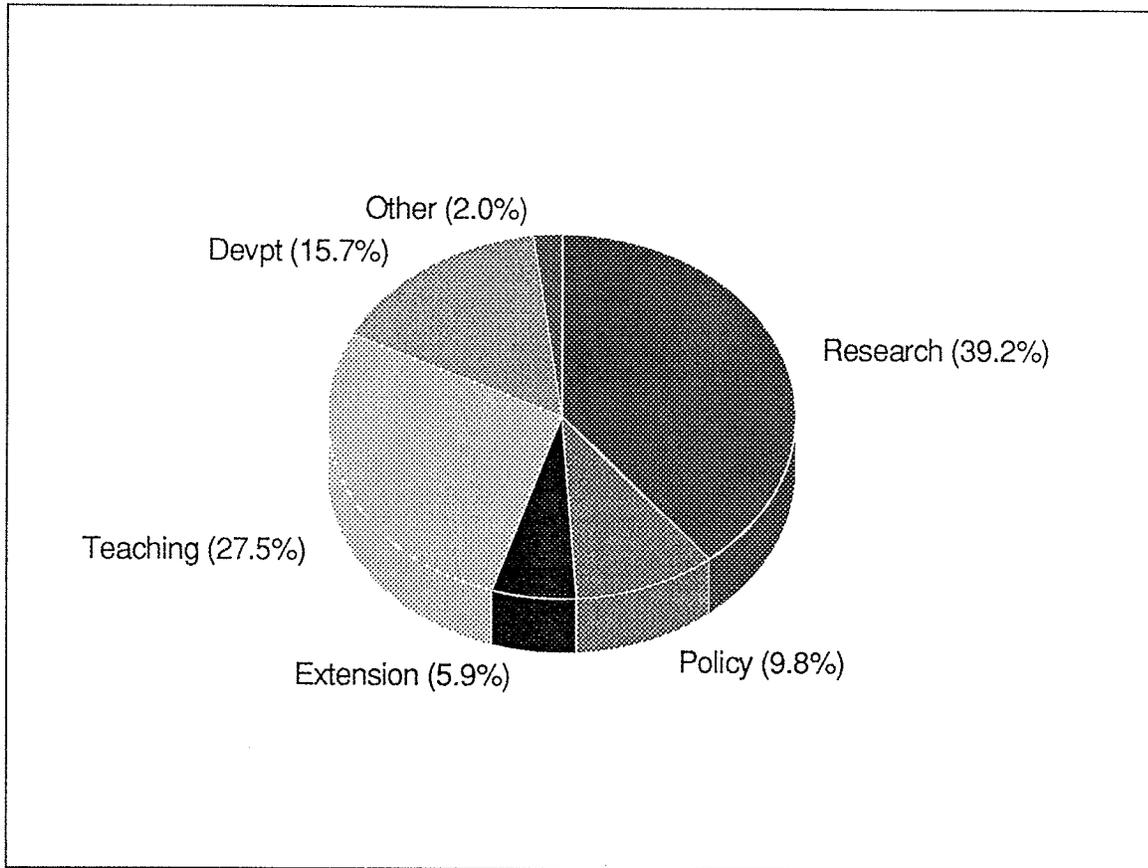
The rationale for providing management Workshops to African graduate students is that upon resumption of work duties, seniority will progress rapidly. On the questionnaire, respondents were asked to indicate their level of seniority within their organization. There were five categories to choose from, senior management, middle management, first line management, professional and other. All the respondents picked out one of the first four categories.



**Figure 4** Type of Organization

Source: 28 Questionnaire Responses

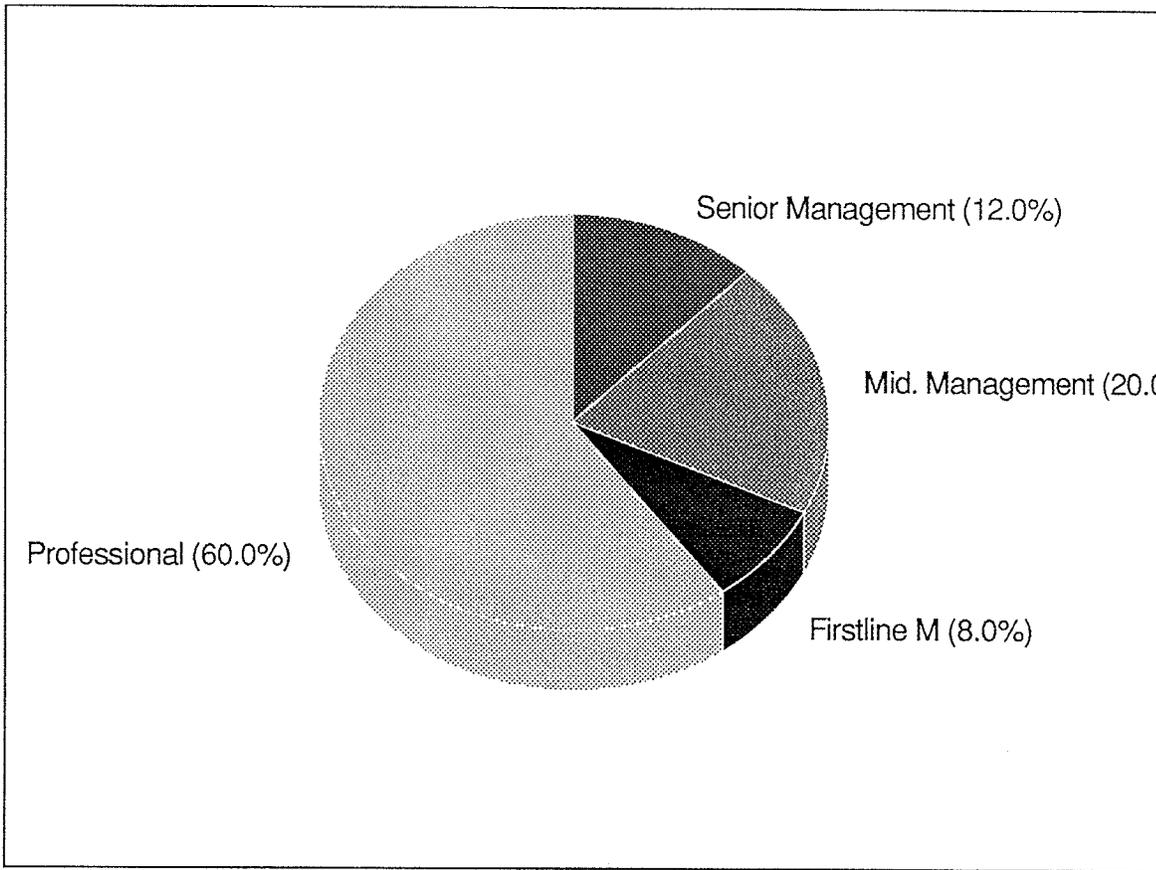
Results showed that about 40% of the respondents were in some kind of management position either at senior, middle or line management (Fig.6). The rest, 60%, of the participants simply described themselves as professionals. As an indicator of the amount of responsibility respondents had, the questionnaire asked them to provide the size of their annual budget, and the number of people supervised. Because respondents were from various countries and working in different institutes, the absolute numbers could not be compared.



**Figure 5** Main Activity of Organization

Source: 28 Questionnaire Responses

However, the numbers were useful in that they provided proof that respondents were in positions of responsibility. As an example, a senior manager from Lesotho who was working for an NGO had an annual budget of US\$900,000, while a senior manager from Senegal had an annual budget of US\$200,000. A middle manager from Ethiopia had an annual budget of US\$750,000, while a middle manager from Benin had an annual budget of US\$16,000.



**Figure 6** Position Held by Respondent

Source: 28 Questionnaire Responses

With regard to the number of people supervised, responses showed that middle managers supervise between 3 to 400 people, while senior managers indicated smaller numbers ranging from 5 to 35. Both the budget figures and number of subordinates confirm that respondents do have management responsibility. What is not known, because the question was not asked, is whether respondents moved into management positions after their graduate programs, or whether they held the same jobs before going to graduate school.

## **Type of Work**

To have a better understanding of why some of the Workshop skills were found to be more useful than others, respondents were provided with a list of various tasks and asked to indicate the time devoted to each as a percentage of total work time. Some 24% of total work time was spent on research, 18% in teaching, 16% in planning, 11% was spent on management activities and another 11% attending conferences/study. Coordination, extension, and administration each took up less than 10% of work time (Fig.7).

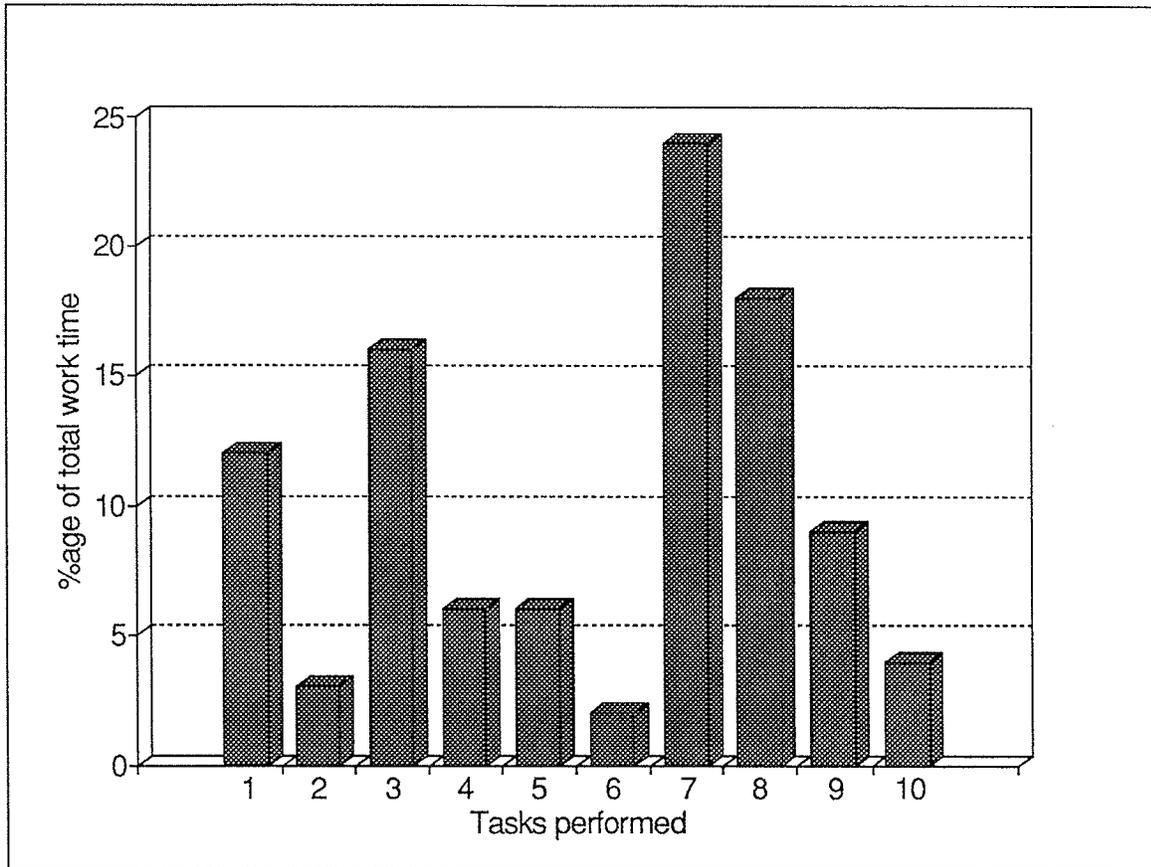
Once again, these results support identified needs of the Workshop, research accounts for the major component of participants' work.

## **Workshop Objectives**

Participants were asked to say how well they thought objectives had been achieved. Objectives were rated on a scale from 1 to 5; 1 was equivalent to an objective not at all achieved, and 5 a fully achieved objective. The results of the ratings can be seen in the bar graph in Figure 8.

The objective to enable African students in Canada to share experiences (D) received the highest rating of 3.85. To achieve this objective, participants were given an opportunity to share experiences amongst themselves both formally and informally during the Workshop.

Objective (B) followed objective (D) with a score of 3.71. Objective (B) aimed at raising awareness of principles and requirements of research management. Objective (A), overview of skills and knowledge in management in an African environment, rated closely behind objective (B) with a score of 3.57. The objective that got the lowest rating of 3.51 was objective (C), which aimed at imparting communication, presentation, and group dynamic skills. Communication and presentation skills were imbedded in the assignments as the participants made presentations of their case studies. The rating may suggest that this method of teaching group dynamics and communication skills may not be adequate. It may be necessary to have a formal session on these.



**Figure 7** Type of Work Respondents Do

Source: 28 Questionnaire Responses

**Key for Figure 7**

1. Management
2. Policy Making
3. Planning
4. Coordination
5. Administration
6. Extension
7. Research
8. Teaching
9. Conferences/Study
10. Other

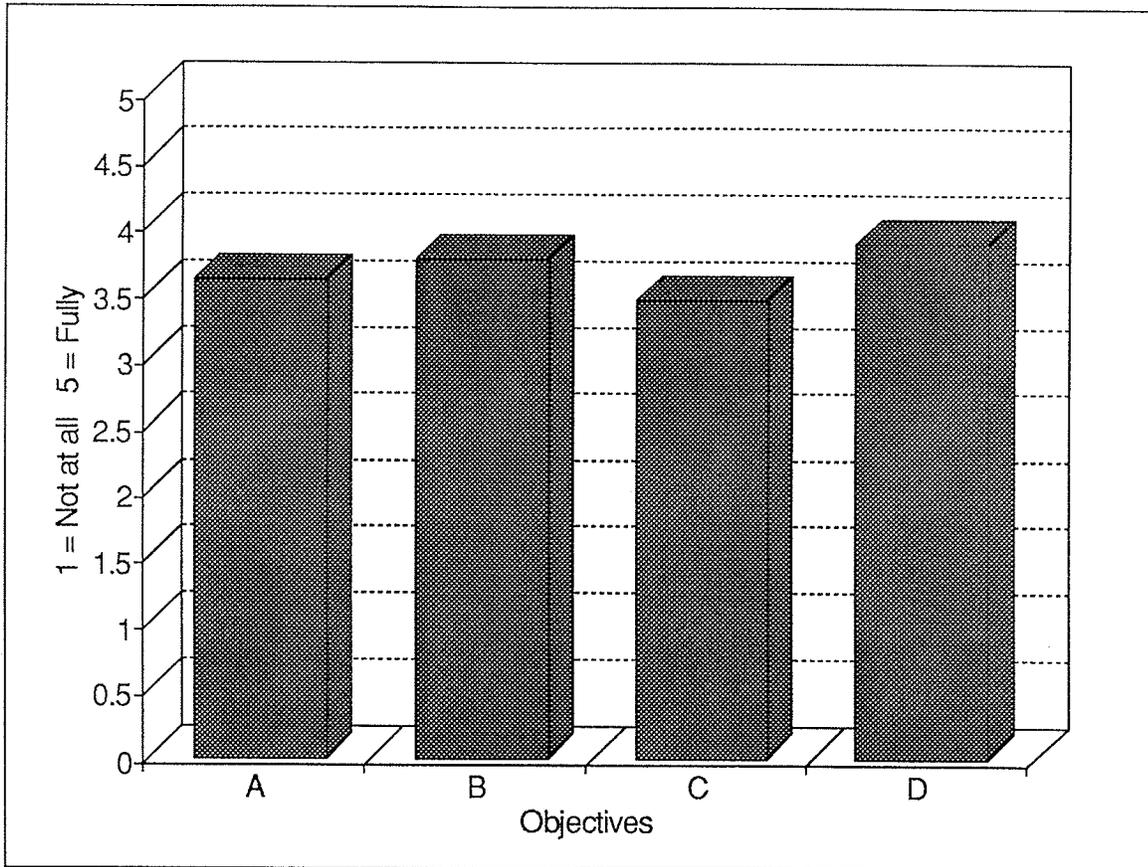


Figure 8 How Well Objectives Were Achieved

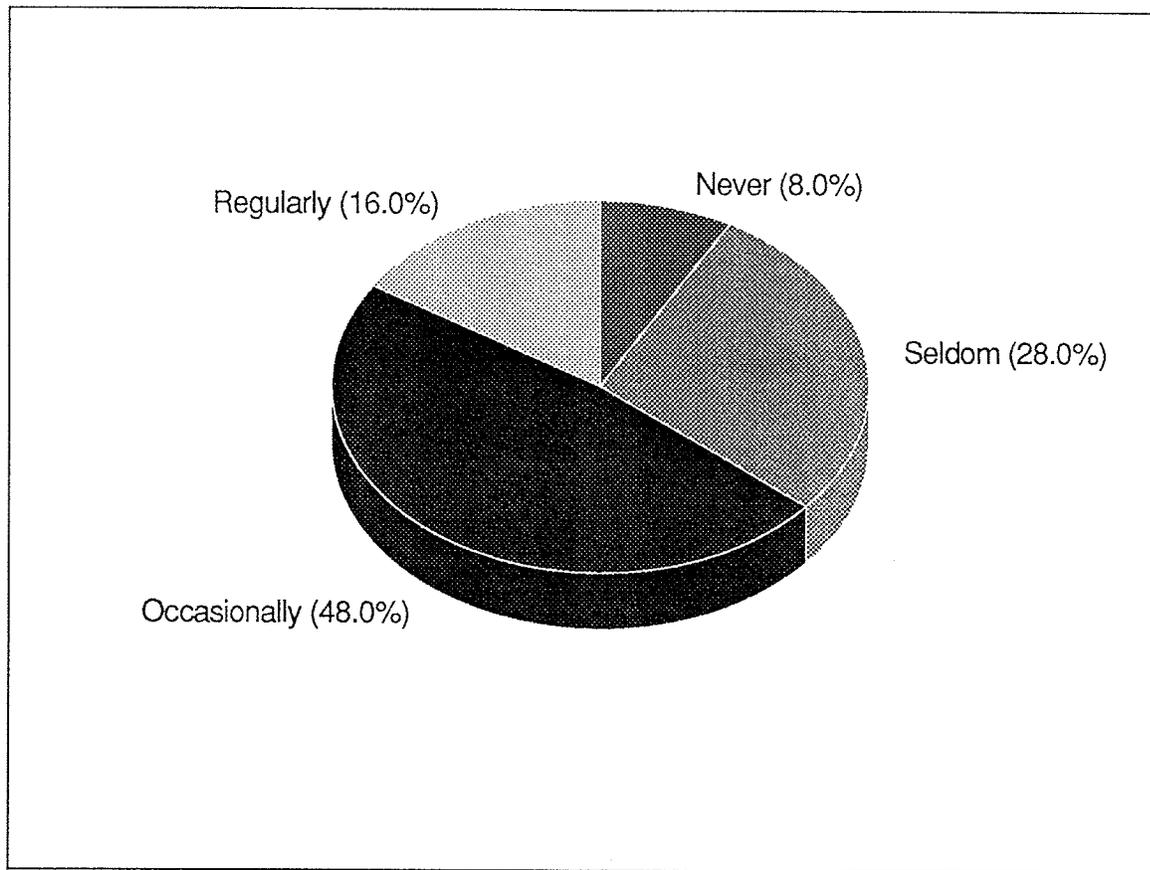
Source: 28 Questionnaire Responses

### Workshop Manual

The Manual is considered by the planners to be an important tool for the Workshop. It consists of a Workshop schedule, instructions on manual use, participant and presenters' profiles, and material on the three modules of the Workshop. The module material consists mainly of papers written by the presenters and edited by the organizers.

The Manual has two basic purposes: (1) pre- and during Workshop use (2) post Workshop support to participants in their new jobs.

Planners consider (1) to be most important and (2) to be significant. It is this latter aspect of the Manual's use that the researcher was investigating in the questionnaire. Respondents were asked to indicate how often they refer to their Manual. Only 14% of the respondents said they regularly use the Workshop Manual, 50% said they use it occasionally, 28% said they seldom use it and 8% said they never use it (Figure 9). The 8% represents 2 people who said that they had not yet unpacked their Manuals since getting back home from Canada. Although both people had been back for over a year, one person said he did not yet have proper accommodation. This explained why he had not unpacked some of his possessions. The other did not give a reason. These results show that the Manual is used occasionally after the Workshop. In view of the substantial cost that has gone into preparing the manual, these results could be interpreted that post-workshop use would not justify the Manual by itself.

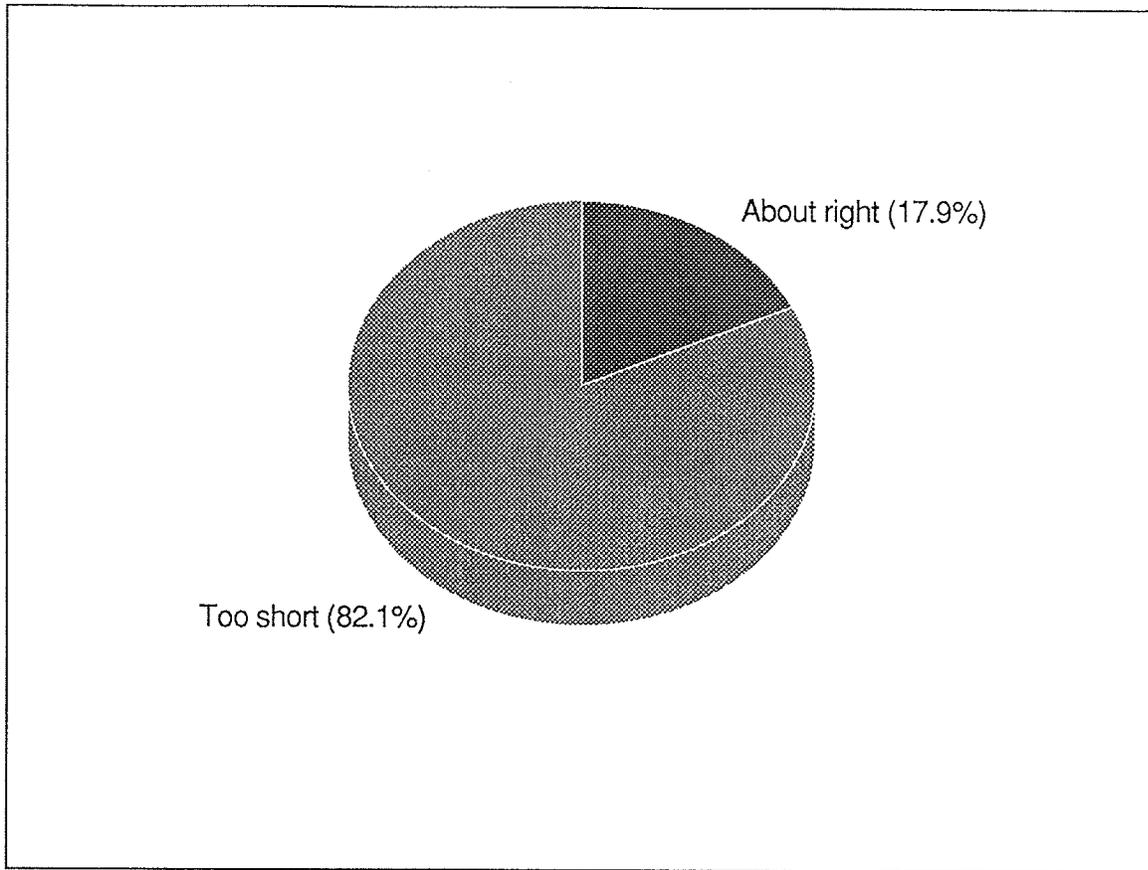


**Figure 9** Respondents' Use of the Workshop Manual

Source: 28 Questionnaire Responses

### **Length of the Workshop**

The Workshop is two and one half weeks long with the first half week devoted to the Computer Module (I). Modules II and III take up one week each. Some 82% of the respondents said that the Workshop was too short (Figure 10). Only 18% said the length of the Workshop was just right. They did point out however, that less material should have been covered in the given time. These results suggest the need to either lengthen the duration of the Workshop without adding more material, or reduce the material.

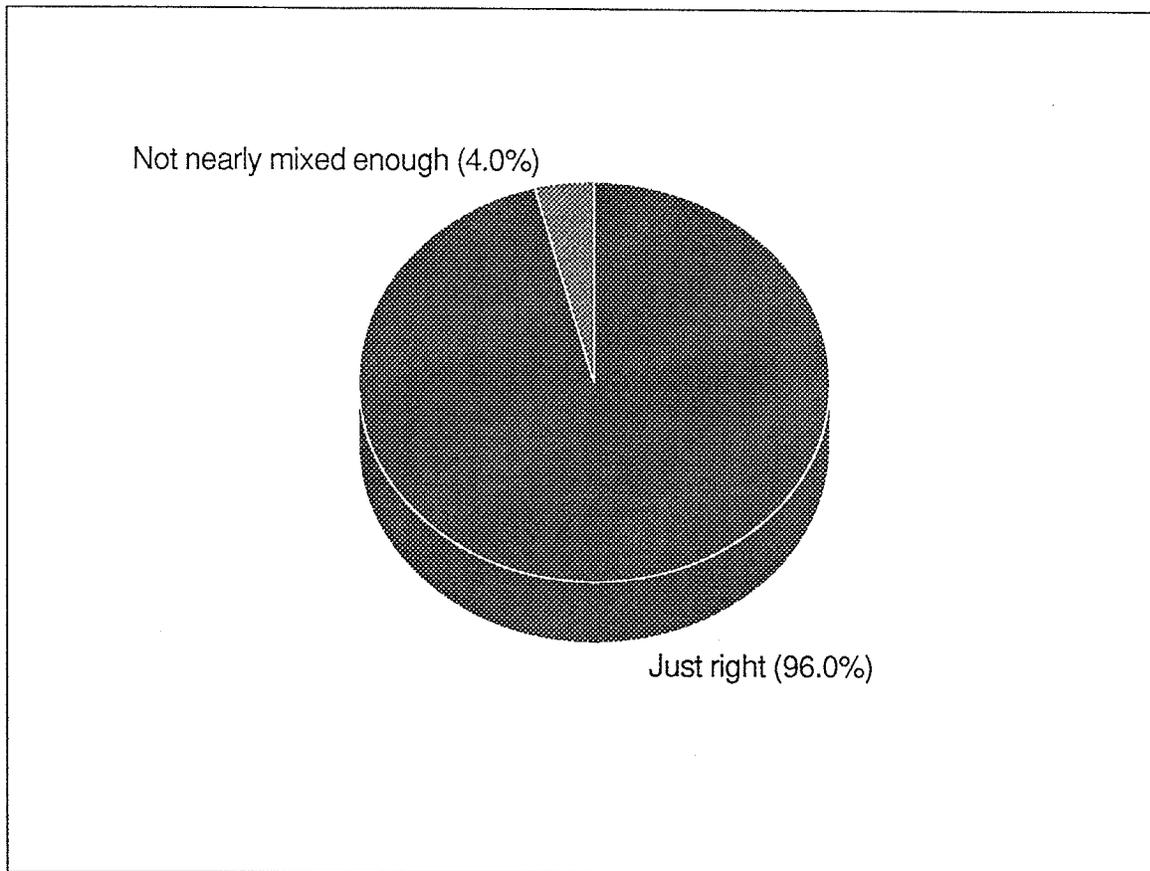


**Figure 10** Respondents' Perception of the Workshop Length

Source: 28 Questionnaire Responses

### **Nationality Mix**

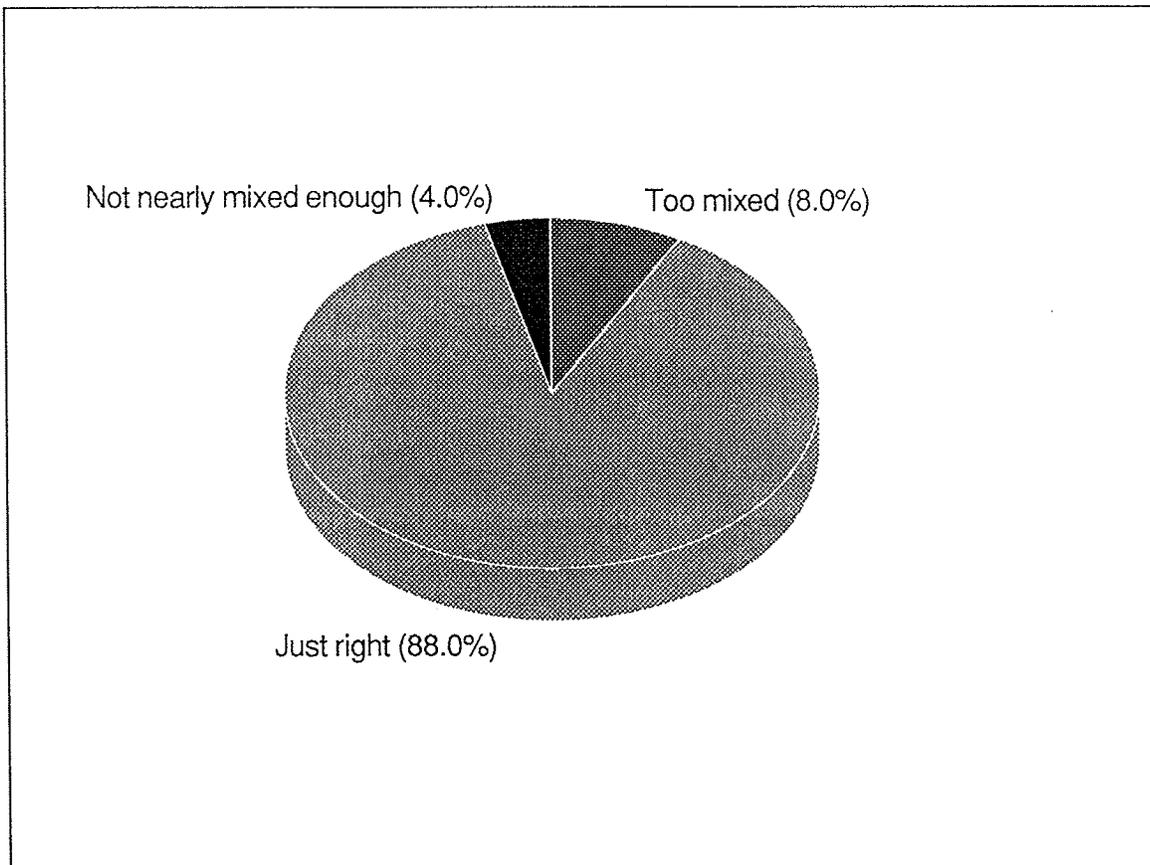
Respondents were asked to say what they thought about the mix of the group by nationality. All the respondents except one said that the mix was just right (Fig.11). The person who disagreed thought that the group was not mixed enough because Arab Africans did not form part of the group. That respondent felt that their presence would have added a different perspective to the Workshop.



**Figure 11** Respondents' Perception of the Nationality Mix

Source: 28 Questionnaire Responses

According to the Workshop coordinators, there has been no deliberate exclusion of people from Arab Africa and there has been one participant from Egypt. Overall, results in this section support the Workshop strategy on nationality mix.



**Figure 12** Participants' Perception of Disciplinary mix

Source: 28 Questionnaire Responses

### **Disciplinary Mix**

The question was whether the group was mixed just right, too much, or not enough, by discipline. Table 1, which is provided in Chapter III, shows the mix of participants, by discipline. Some 79% respondents said that the disciplinary mix was just right. A small proportion (10.7%) said the group was not nearly mixed enough while 7.1% said the group was too mixed, and 3.6% said the group was far too mixed (Fig. 12). Among the people interviewed, one of the interviewees said that the group was not mixed enough because there was a dominance of Agricultural Economists.

The person said that some of the discussion sessions tended to have too much economic jargon. One other person felt that the group should have been more homogenous, which, it was claimed, would have allowed for more focus and discussion of specific issues within one discipline.

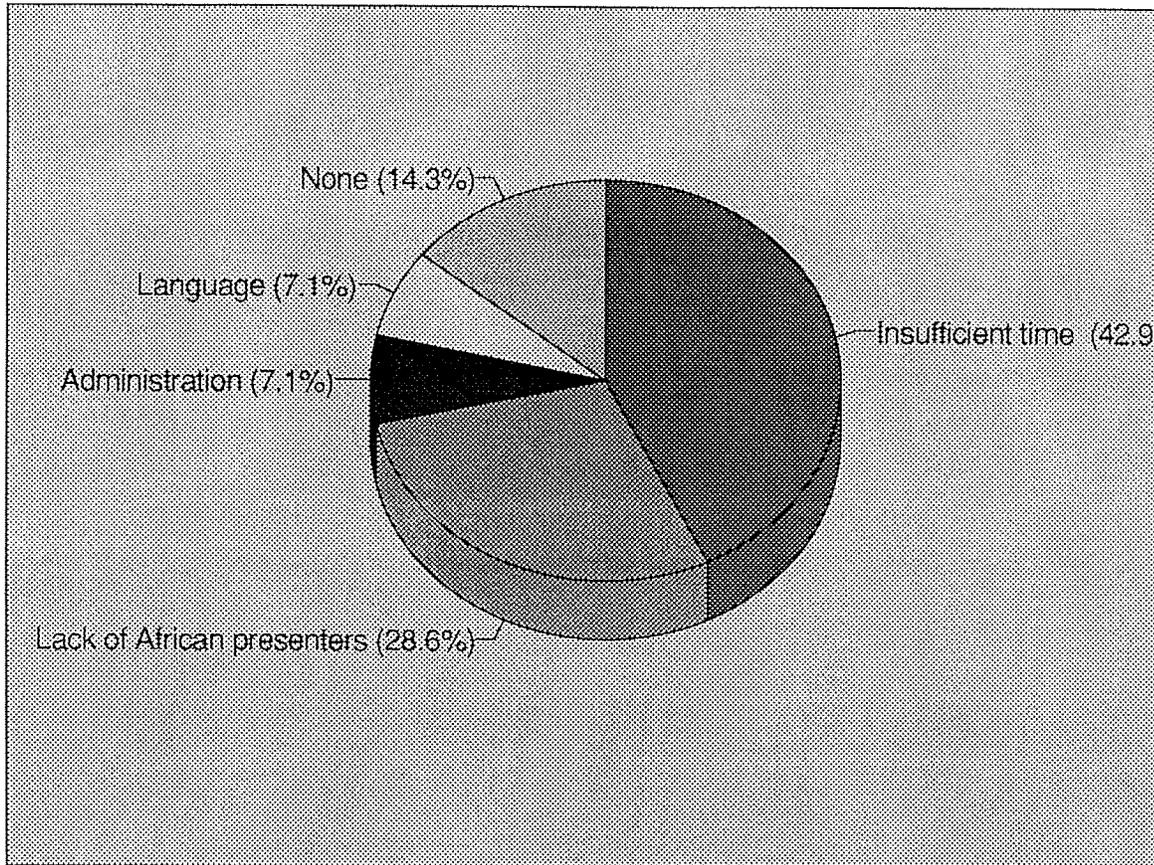
The results are generally favourable to the disciplinary mix although, it would appear that some modification could lead to more acceptable results.

### **Weaknesses of the Workshop**

Respondents were asked to state the weaknesses of the Workshop in the form of an open-ended question. There were four most frequently mentioned weaknesses (Figure 13). These were;

1. heavy workload,
2. lack of African presenters,
3. language, and
4. poor administration.

Most of the respondents (42.9%) said there was not enough time to adequately cover the material provided, 28.6% respondents said that a lack of African presenters was a weakness, 7.1% said there was poor administration especially regarding disbursement of funds, and, 7.1% (from African countries where French is the official language) said they had problems with language and would have found a translator quite useful. Some 14.3% respondents gave the answer "None" to the question regarding weaknesses.



**Figure 13** Weaknesses of the Workshop

Source: 28 Questionnaire Responses

### **On the Worth of the Workshop**

Question 11 in part B of the questionnaire asked respondents to say whether or not they would recommend the Workshop to a colleague. This question gave respondents an opportunity to give their perception of whether the Workshop was worthwhile or not and was a form of overall evaluation of the worth of the Workshop. The question was in two parts: part (a) asked whether the respondent would recommend the Workshop to someone in professional circumstances similar to the respondent's at the time of the Workshop. For most of the respondents, this referred

to someone in a graduate program in Canada. All the respondents, except one, said they would recommend the Workshop to a colleague. The person who answered no gave a reason for giving such an answer. He said that he felt that too much time elapsed between the time of the Workshop and resumption of work duties. In part (b) of the same question, respondents were asked if they would recommend the Workshop to a colleague in their current position. All of them said yes, including the person who said no to part (a). These responses showed respondents regarded the Workshop as a positive and beneficial endeavour.

### **Rating of Topics - by Modules**

This section of the questionnaire addressed a number of levels of the evaluation model, levels 2, 3, and 5. Level 2 is assessment of content, level 3 assesses delivery, and level 5 assesses application of new knowledge and skills. Respondents were asked to rate key topics according to content, presentation, and usefulness to work. Six key topics were picked for Module I, and five topics each for Modules II and III. Respondents were asked to rate them on a scale of 1 to 5, from poor to excellent.

The results presented in Figure 14 include ratings for content, presentation, and usefulness to work all graphed in the same space. This style of presenting results on the same graph was borrowed from ISNAR. Since rating of the topics was done in a purely quantitative manner, respondents did not have an opportunity to explain why they rated some topics low or high. This was a weakness in the questionnaire because it would have been helpful to know why certain tools are not being used by participants.

Except for topics 2 and 9, Logical Framework and Managing Structural Adjustment, the graph representing usefulness to work was always higher than the graphs for content and presentation. This suggests that in general, the topics were found to be relevant but both content and delivery need to be improved.

**Module I- Computers in Research** This module was rated very highly for usefulness to work. In particular, the best rated topics for usefulness to work were Word Processing and Statistical Packages. Statistical Packages was rated highest in this category for all the three modules. Graphics was rated as the least useful.

Content and Presentation were rated low for this module. The topics that were rated the lowest for content and presentation were Database and Graphics. The divergence between usefulness to work and content and presentation suggest a need to improve on content and presentation. Respondents do find the Computer Module relevant and useful to their work. In fact, in this category, the Computer Module rated above both Modules II and III.

**Module II - Management in an African Setting** had five key topics which were rated for content, presentation, and usefulness to work. In all three categories, all the topics, except Gender Issues in Development, were rated well above average. The latter topic was rated average for both content and presentation. For usefulness to work, it was rated slightly above average. Given the distinct possibility that gender bias may exist, the researcher separated questionnaires by gender to determine whether or not responses on this topic were different. There were three women in the

sample and their responses suggested that they viewed this topic more positively. Two of them gave it a 5 (highest score) for usefulness to work, while the third one gave it a 4. As far as content and presentation were concerned, the results were very close to the average rating given by all the respondents, men and women included. This evidence, albeit slim, of gender bias on this topic implies particular problems in improving performance in this area. The alternative is to drop it because of the poor overall evaluation.

**Module III- Research Management** was also rated based on five key topics. All the topics except one were given high ratings in all three categories. The most useful topics were said to have been Research Management, and Project Formulation and Proposal Writing (Topics 6 and 8). Logical Framework Analysis, topic 9, was not rated as highly as the rest of the topics in this module. Content and presentation rated above usefulness to work for this topic. This implies that respondents do not find this topic as relevant to their work as all the other topics.

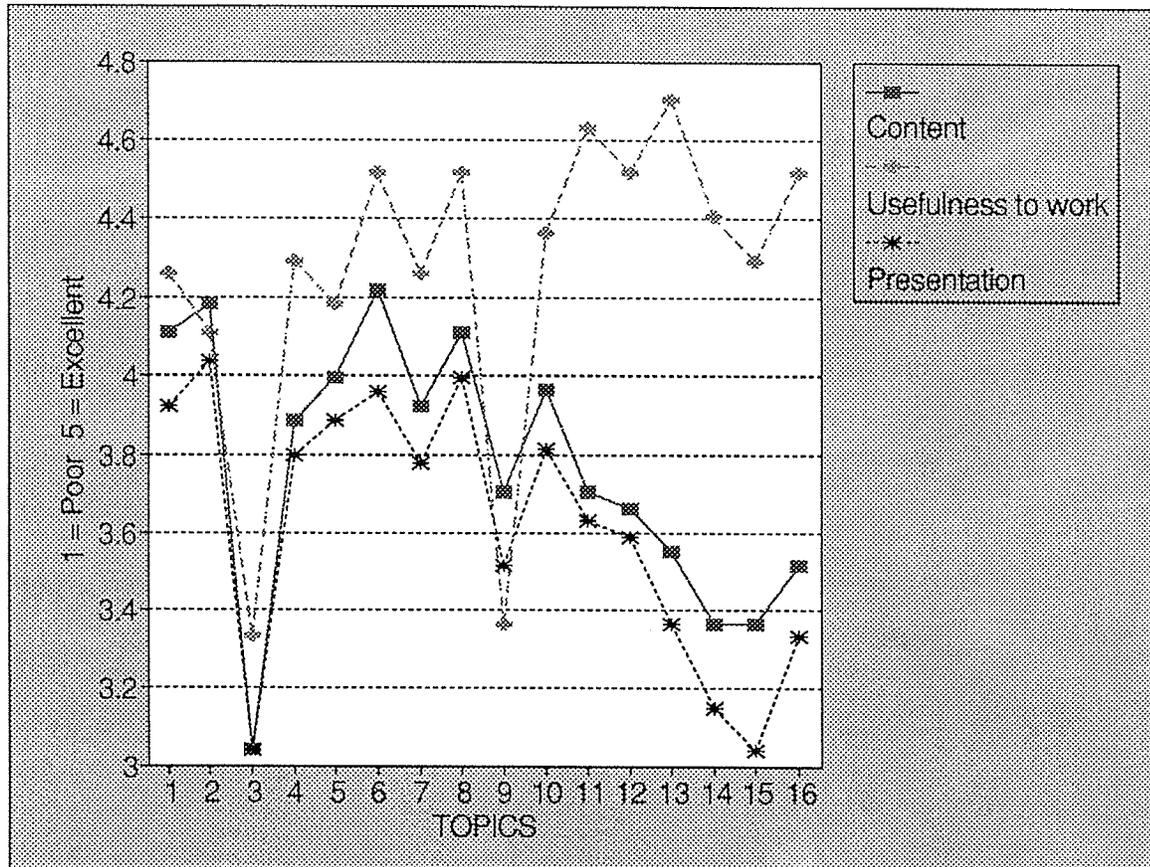


Figure 14 Rating of Topics

Source: 28 Questionnaire Responses

**Key for Figure 14**

**Module II**

1. Principles of Management in an African Setting
2. Managing Structural Adjustment
3. Gender Issues in Development
4. Planning and Budgeting
5. Task Assignment and Personnel Management

**Module III**

6. Research Management
7. International Research Network
8. Project Formulation and Proposal Writing
9. Logical Framework
10. Monitoring and Evaluation

**Module I**

11. Computers in Research
12. Word Processing
13. Statistical Packages
14. Database
15. Graphics
16. Spreadsheets

## Open-ended Questions

Open-ended questions were used as an unstructured way of collecting information. On the questionnaire, they were also used to explain Yes/No questions. In some cases, respondents left the open-ended sections blank. Appendix 4 provides all the responses from the Open-ended questions.

The majority of respondents said they found the Workshop very useful, and would in fact recommend it to a colleague. This was consistent with results of the closed questions, and organizers' on-going evaluations. One respondent summarized the opinions of most of the other respondents by saying, "It (the Workshop) is a very essential thing that graduate students should pass through, as, in one way or another they will face it in their work".

Participants were asked to state the strengths and weaknesses of the Workshop, and to suggest ways of improving it. Some respondents said that they found the Workshop to have been well organized, and as one respondent put it, "Overall, good, well organized and most topics were conducted with professionalism". Respondents felt that the Workshop had been well organized overall, although some aspects of the administration were found to be weak. According to one respondent, "Financial nuts and bolts need lubrication". This suggests the need for improving the financial administration of the Workshop as it relates to participants.

As for the weaknesses of the Workshop, the most frequently mentioned was that the workload was too heavy. Participants expressed that they did not have time to digest the information they were receiving during the Workshop.

Suggestions for improving the Workshop were related to both the weaknesses and the strengths of the Workshop. There was a suggestion to lengthen the duration of the Workshop to allow time to cover all three modules more thoroughly. Respondents suggested that African managers, currently working in Africa be invited to give first hand information on managerial problems in Africa. There were two respondents from French speaking countries who suggested that the Workshop be run in both English and French.

Most of the respondents said they would recommend the Workshop to someone in professional circumstances similar to their own. All the respondents except one said they found the management skills they learned to be quite useful. The one person who said they would not recommend the Workshop to a graduate student pointed out that there was a time lag between attending the Workshop and resuming work, thus depriving a participant of the opportunity to apply new skills right away.

Overall, the open ended responses reinforced the closed responses. In some cases, the open-ended responses explained why some aspects of the Workshop did better than others.

## **Additional Information from Interviews**

To find out what current management needs are for participants, during interviews, interviewees were given an opportunity to talk about their work, particularly the constraints they face. By knowing the kind of environment participants work in, training needs could be identified. In addition, this information could provide an insight as to why participants use some of the skills they learned and not others. Below are the findings from the interviews regarding constraints. The constraints can be grouped into the following classes:

- financial resources for research
- lack of international contact
- lack of infrastructure: office space, communications, computers
- lack of operating expenses: transport

The most frequently mentioned constraint was financial resources for research. Universities seemed to be the main victims of these financial constraints. An example was given by a University of Zambia lecturer on some of the consequences of financial constraints. According to the interviewee, they write proposals, get them approved but never do the actual research because the funds are not available. Their department gets a lump sum research fund to be divided among approved projects. The sum is usually not enough even for one project, and the projects are not prioritized so nothing gets done. The universities did not seem to have much money for conferences either. For example, a Kenyatta University professor lost two opportunities to go to England and Washington D.C. for conferences. Although in both cases the sponsors of the conferences were going to cover his hotel accommodation and

other expenses, his institute, the university, was asked to provide the air tickets. The university had no money, so the person could not go. This inability to attend conferences and seminars means that once individuals are back in their countries, they miss out on opportunities to update themselves. Part of the second problem listed, lack of international contact, is because of this inability to attend conferences and seminars outside home countries. The other reason is that there are no funds to subscribe to journals and other publications.

The lack of infrastructure was apparent to the researcher during visits to participants' institutions. Except for one senior manager, none of the people interviewed had telephones in their offices. At one research station, there were no computers even though some of the work required computer use. The station relied on computers at the head office. The person interviewed used his own personal computer at home. In universities too, a couple of lecturers had their own computers in the office because the university computers were mainly used for administrative purposes. The only person who had ready access to a computer belonging to an institute was a senior manager at a research institute in Kenya. This lack of access to computers by the majority of participants suggests that computer use by these participants is limited. Given this, Workshop organizers can take that into account when planning the computer module in terms of time devoted to it, and the level of delivery. It might be more practical to provide a basic overview on computers, rather than a lot of detail.

Another major constraint was the lack of operating expenses. This was most apparent in the lack of transport. From the accounts of the interviewees, when a vehicle broke down, it took up to several months before it could be fixed because of the lack of funds to buy spare parts. Sometimes government vehicles stayed off the road because there was no gas at a research station. Field work came to a halt due to lack of transportation. Everyone in government and parastatals admitted that they sometimes find themselves at a loose end because of lack of transportation. In fact, the time, cost and number of responses to this survey were influenced negatively by limitations of transport both in Zambia and Kenya. It was not feasible to go outside the two capitals, Lusaka and Nairobi, to interview participants who were either working in other towns or on field trips.

According to interviewees, there is a strong overlap between work activities and social activities. For example, government vehicles are made available to employees during funerals. Workers are given time off for funerals of any relative, immediate or distant. All the people in management who were interviewed pointed out that they lose a significant number of man hours as a result. Besides funerals, workers also bring a variety of other family problems to work, and they can even ask for loans to meet family obligations. One pathologist said he is in charge of 35 people and he deals with these kinds of problems every day. He said that the Workshop had partially prepared him to deal with such issues, but he felt that more should have been covered on personnel management.

## Recommendations for the Course

Various issues come out of this study. At the beginning of the study when the researcher was trying to trace previous Workshop participants, research showed that only 52 out of 102 participants had returned home. The other 50 participants were still in Canada either studying or settled. Given that organizers target people who are close to completing their studies, the number of returnees seems low. Organizers need to address this issue in terms of their stated objectives. They could modify their objectives by accepting that students do not return to their countries immediately. If that is the case, Workshop organizers might consider providing participants with skills that they can use immediately in their graduate programs. The alternative would be to be more strict in choosing participants and ensuring that only those who are at the end of their stay in Canada and planning to return home are invited.

The information in the preceding section could also help Workshop organizers in designing their program and in designing subsequent evaluations. For example, given that computers were not readily available to most of the interviewees, a more basic computer curriculum could be developed by Workshop organizers. Since the computer module rated above the two modules for usefulness to work, it is still important to retain it in the Workshop even though participants have limited access to computers in their institutes.

A different way of dealing with the computer module would be to say that since this module was rated very low for content and presentation, it should be excluded. Better to exclude it than deliver it poorly. If the computer module were to be excluded

from the Workshop, there would be cost savings in terms of time and resources. It is not feasible to estimate what participants would be losing in the process. Below is an estimate of the cost of the computer module.

| <b>Computer Module</b>       | <b>\$</b> |
|------------------------------|-----------|
| Honoraria                    | 2,500     |
| Classrooms                   | 150       |
| Stipend (participants)       | 225       |
| Accommodation (participants) | 3,720     |
| Materials                    | 100       |
| Refreshments                 | 270       |
| Coordinating                 | 450       |
|                              | -----     |
| Total                        | 7,415     |

Similar arguments can be applied to the topic, 'Gender Issues in Development', from Module II. Both content and presentation of this topic received a low rating. The ratings for usefulness to work were also low, but analysis of results by gender suggested a bias. The three women in the sample gave higher scores for usefulness to work when compared to men. Since the sample size is small, it is risky to draw hard conclusions from this evidence. All that can be said is that some of the participants do find gender issues useful to their work and IDRC considers it an important subject which the Workshop is supposed to cover. Given these facts, there are two alternatives that Workshop organizers may consider. They could either review the content and delivery of this topic and make improvements, or they could remove the session on gender. Removing the session does not necessarily mean excluding gender issues from the Workshop since gender can be integrated into all the sessions of the Workshop. This may be a more positive way of dealing with the topic, instead of isolating it and addressing it as a problem relevant only to women.

If the option of taking out the gender session is adopted, below is an estimate of the cost savings.

**Gender Issues in Development**

|              |       |
|--------------|-------|
|              | \$    |
| Honorarium   | 250   |
| Materials    | 50    |
| Refreshments | 10    |
|              | ----- |
| Total        | 310   |

Looking at the cost figures for both the Computer Module and Gender Issues in Development, an estimated \$8,000 could be saved by deleting them. Time would also be saved, about four days, and this could either be used for other areas or to shorten the duration of the Workshop.

Excluding the Computer Module and Gender Issues in Development is only an option, and not necessarily the best option. Participants did rate the Computer Module very highly for usefulness to work and likely need this module. Before excluding it from the Workshop, organizers could try to improve the content and presentation. For Gender Issues in Development, given that it is considered a priority by IDRC, and indeed by some of the respondents (women), it would also be helpful to review the content and delivery, and make some improvements.

The strong overlap between work activities and social activities that interviewees raised could be converted into a very important lesson on the need to deal with organizational behaviour issues: human resource management, time management, communication skills, dealing with politicians, etc. This would fit very

well with the Workshop organizers' objective of being culturally relevant. Given the recommendation to make the Computer Module more basic, perhaps more time could be allocated to organizational behaviour issues.

## CHAPTER VI

### SUMMARY AND CONCLUSIONS OF THE STUDY

Increasing scarcity of resources demands that evaluation of training programs take place to ensure allocation of resources to the most useful purposes. Evaluation also assists in identifying priorities for subsequent training activities. This study aimed at developing a model for providing useable evaluation information in management training. The first requirement of this study was to review training evaluation literature for appropriate methods and models, and then to select or modify identified models. However, as a consequence of the opportunity to conduct the study as a resident researcher at ISNAR, the study was extended to include a testing stage for the model. The testing stage involved a sample of participants who had gone through the IDRC Research Management Workshops at the University of Manitoba. In summary, the objectives of the study were as follows:

1. To present or develop a conceptual framework and model for providing useable evaluation information on management training programs such as the University of Manitoba Research Management Workshop.
2. Develop and propose an instrument for conducting such an evaluation given that ISNAR was prepared to provide funding for testing the model and instrument.
3. Conduct a pre-test survey on a group of students at the University of Wageningen in Holland, and conduct a pilot project to test the model and instrument on graduates of the IDRC Research Management Workshop in Kenya and Zambia.

The training evaluation model was developed by combining three models that were reviewed in the study. These were, Stufflebeam's CIPP model, Brinkerhoff's six stage model, and ISNAR's four stage model. Using the proposed model, a survey questionnaire was developed. The questionnaire was tested on a group of students who were taking a nine-month course at the University of Wageningen in the Netherlands. This group was comprised of international students taking an agricultural course that had a management component. Once the instrument had been tested, it was applied on a sample of participants who went through the University of Manitoba Research Management Workshop. Primarily, the Workshops are for African graduate students studying in various Canadian universities. The study focused on fifty-two of these participants who went through the Workshop and had returned to their home countries at the time of the study.

The rationale for the Research Management Workshops is that most graduates upon return to their countries quickly assume management responsibilities for which they have little or no training. The Workshops therefore aim at imparting management skills to students who are believed to be close to the end of their graduate programs. In testing the developed model, the focus of the study was on application of new skills and how relevant these are to their work situation.

The first two questions on the questionnaire were intended to support or refute identified needs of the Workshop, namely that participants work in research institutes and find themselves in management positions. Question (3) provided participants' perceptions of how well the Workshop objectives were achieved. The rest of the

questions provided general information about the Workshop, its strengths and weaknesses, and specific information on the topics covered during the Workshop. This information could then be used by Workshop organizers to make any necessary modifications to the Workshop.

Using the survey instrument (questionnaire), 13 Workshop alumni were interviewed in Kenya and Zambia. In addition, thirty-nine questionnaires were mailed out to participants who had returned to their home countries at the time of the study. These questionnaires were mailed out at the end of March 1992, and by the end of July of the same year, 15 questionnaires had been returned. Including questionnaires from the interviewed participants, 28 questionnaires were analyzed in this study.

### **Summary of Findings**

Out of all the respondents, 42.9% were employed by government, 42.9% were in universities, 7% worked for parastatals, 3.6% worked for Non Governmental Organizations, and 3.6% work for other types of organizations. Respondents were asked to indicate the main activity of their institute. Thirty nine percent of them said research, followed by teaching (28%). The rest were; 16% development, 10% policy, and 6% extension.

A question aimed at finding out respondents' level of seniority within their institutes showed that some 40% were in management (either senior, middle, or line management), while the rest (60%), described themselves as professionals.

The above information supports identified needs of Workshop participants. The majority of participants work in research or research related institutes, and some of them are in management positions.

Participants were asked to rate various topics covered during the Workshop in terms of usefulness to work, content and presentation. Overall, the Computer Module was rated the highest for usefulness to work. Two other topics were rated highly in Module II; 'Research Management' and 'Project Formulation and Proposal Writing'. The Computer Module was rated below all the other topics when it came to content and presentation. Another topic which was also rated low in all three categories was, 'Gender Issues in Development'. Further analysis of results on this topic suggested gender bias in the way it was evaluated. However, results were not conclusive because the sample was small. There was one topic whose 'usefulness to work' was rated almost as low as 'Gender Issues in Development'; it was 'Logical Framework Analysis'. Unlike the former, the latter topic was rated above average for 'content' and 'presentation'. This seemed to suggest that although participants found the content and delivery of this topic good, the topic itself was not very useful in their work.

Open-ended questions on the questionnaire provided information that could be useful to Workshop organizers in gearing the Workshop to suit participants' needs. The questions were related to strengths, weaknesses, and suggestions for improving the Workshop. According to participants, the main strength of the Workshop was the opportunity it provided them to learn management skills. The quality of the

presentations, group work and group presentations, and a focus on African issues were all said to have been the main strengths of the Workshop.

Participants said that the weaknesses of the Workshop were; a heavy workload, few African presenters, and language for the French speaking participants. A couple of participants indicated that the administrative side of the Workshop, especially the disbursement of stipends could be improved.

Respondents were asked to give suggestions for improving the course. They suggested that the duration of the Workshop be lengthened, increase the number of female participants, invite more African presenters, and run the Workshop in both English and French.

During interviews, participants were given an opportunity to provide a more detailed review of the Workshop in relation to their work. The information provided an insight as to why participants use some of the skills they learned and not others. Workshop organizers could use the information to modify the Workshop to better meet the needs of the participants. In summary, interviewees said that the major constraints were related to lack of financial resources, lack of international contact, lack of infrastructure, lack of operating expenses, and a strong overlap between work activities and social activities.

Overall, the Workshop was said to have been a worthwhile venture. This was evident in the respondents' consensus that they would recommend the Workshop to a colleague. In addition, they rated all the objectives as having been well achieved.

## **Recommendations**

The Workshop is designed for students who are completing their program and are about to return to their countries. From the survey, only 50% of the participants had returned to their countries at the time of the study. This implies that participants do not return to their countries or do not return immediately after attending the Workshop. If it is important to the funding agency (IDRC) and the Workshop organizers that the target group be people who are about to return home, then the organizers need to tighten their process of screening Workshop participants. However, if it is not crucial that participants of the Workshop return home soon after attending the Workshop, then organizers might have to modify the program. Organizers might be able to provide material that the participant could use in their graduate program, and when they get back to their country. Emphasis would depend on the Workshop priorities.

Two suggestions were made regarding the Computer Module. First, there is a need to revise both the content and delivery of this module in response to the low ratings that it received, especially given that respondents found computers useful in their work. If this module continued getting bad reviews for content and delivery, the second option would be to exclude it altogether. Organizers in the past have already addressed the issue of content and delivery. At least three formats of delivery have

been tried, and they each had different emphasis (hands on practice or limited hands on). On-going evaluations of the Workshop show that participants differ in the approach that they prefer depending on their computer background. Since participants will always have diverse computer backgrounds, it is difficult to say which approach is better. The question, however, is how much computer skill and knowledge can be taught in three days? It is hard to say; but in terms of the best use of limited resources, it might be more useful to teach some other topic rather than try to meet the needs of 25 participants with 25 different computer backgrounds.

'Organizational Behaviour' is a topic that respondents expressed a need for given the kind of problems they have to deal with as managers. This topic might provide an alternative to the Computer Module. 'Gender Issues in Development', from Module II also received low ratings for both content and presentation. The ratings for usefulness to work were also low, but analysis of results by gender suggested a bias. The three women in the sample gave higher scores for usefulness to work when compared to men. Since the sample size was small, it was not appropriate to draw hard conclusions from this evidence.

All that can be said is that some of the participants do find gender issues useful to their work and IDRC considers it an important subject for the Workshop to cover. Given these facts, there are two alternatives that Workshop organizers may consider. They could either review the content and delivery of this topic and make improvements, or they could remove the session on gender without necessarily excluding gender issues from the Workshop. The idea behind the latter suggestion

would be to integrate gender issues into all the sessions of the Workshop and eliminate dealing with it as a separate issue. This may be a more positive way of dealing with topic, instead of isolating it and addressing it as a problem relevant only to women.

The third topic which was rated low for usefulness to work was 'Logical Framework Analysis.' This topic was said to have been strong both on content and presentation but weak on usefulness to work. Again, given that respondents identified areas where they would like more training, organizers could exclude this topic and replace it with something that participants find more relevant to their work.

Removing the Computer Module, Logical Framework Analysis, and Gender Issues in Development would result in some cost savings. The estimates provided in Chapter V indicated total cost savings were about \$8,500. As already suggested, these funds could be used to provide training in topics such as human resource management, time management, communication skills, dealing with politicians, etc. The strong overlap between work activities and social activities that interviewees raised suggests a need to deal with such issues. This would fit very well with the Workshop organizers' objective of being culturally relevant.

### **Limitations of the Study**

A review of literature on the training and instructional methodologies dealing with retention and transference of new knowledge into practice would have

strengthened the thesis. This is Level 4 evaluation in the Model and it determines whether or not learning occurred. Including this angle in the study may have dictated that other types of indicators be considered. For example, these methodologies recommend the use of case studies and exemplars as part of the interview. Also, some of the data gathered may have been interpreted differently.

Another limitation of the study was that it only involved participants' perceptions. Supervisors were not included in the study. The sample size was also very small and limited the study to using only descriptive statistics for analysis.

This evaluation does not answer questions of payoff of the expenditure of IDRC money relative to other programs or other approaches to human resource development. That is a level beyond the scope of this thesis, and indeed such payoff (benefit) will be realized only years from now. If the payoff is measurable, it would take research skills and resources well beyond the reach of this project. However, a comprehensive evaluation model would have to combine training evaluation and more traditional economic analysis to produce longer term cost and returns information from training programs of this sort (Level 6 Evaluation). Partial and primary level studies like this are important first steps to the longer term picture. The latter cannot be achieved if training programs are working on the wrong problems or are not conducted consistent with identified needs, hence the need for primary evaluations such as this project.

The study also did not include a comparative analysis which was planned, permitting comparison of the University of Manitoba Workshops to similar programs. This is known as Cost Effectiveness Analysis, which describes the technique of costing a given level of output or service. According to Gittinger cost effectiveness analysis is used primarily for evaluating social programs (education, health, nutrition) where outputs cannot reasonably be measured in money terms. The target or achieved level of output is identified and costed out. This cost estimate can then be compared against the cost of providing similar services elsewhere to determine if the project is "cost effective".

### **Suggestions for Further Research**

Time and resources limited the scope of this study. To do a more in-depth evaluation, there is a need to identify useable methods for measuring short and long-term payoffs of such programs. A study that includes supervisors would provide useful information for the training program and could likely use the framework and questionnaire developed in this study. There is also a need to determine the cohort effects of this program. Some authors have suggested that the effects of training should be assessed at least six months after training, and up to 18 months after. In this study, all the respondents had gone through the Workshops at least six months before the study, and some of them as long as five years before.

One other aspect which this study did not include was a comparison of the University of Manitoba Workshops to similar programs. There was an attempt to obtain cost information on other similar programs but the information was insufficient

and there was not enough time to pursue the matter. Workshop organizers are urged to look into this issue so that they can measure themselves against similar programs.

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APPENDICES

Appendix 1: Workshop Schedule for 1991

**1991 IDRC RESEARCH MANAGEMENT WORKSHOP**

**DATE:** Wednesday, May 29, 1991 - Friday, June 14, 1991

**LOCATION:** Module I- Agriculture Building; Module II - Holiday Inn South;  
Module III- Transport Institute (5th Floor, Drake Centre,  
University of Manitoba)

**RECEPTION:** Tuesday, May 28, 1991, 8:00 p.m., Elk Room, Holiday Inn South

**BRIEFING:** Thursday, May 30, 1991, 7:00 - 8:30 p.m., Elk Room, Holiday Inn

## **MODULE I: MICROCOMPUTERS IN RESEARCH MANAGEMENT**

### **Wednesday, May 29**

**8:30 - 10:00 Room 305 Agriculture Building, University of Manitoba**  
Introductions Overview Workshop Case Study Review

10:00 Coffee

10:30 - 12:00 Overview of Microcomputers in Research Management

12:00 Lunch

1:00 - 2:30 Research Papers, Proposals, Desktop Pub., Correspondence

3:00 - 4:30 Statistics, Project Management, Utilities, Budget Requirements

### **Thursday, May 30, 1991**

**8:30 - 10:00 Room 305 Agriculture Building, University of Manitoba**  
Graphics, Presentations, Sources of Information, Maintaining Accounts

10:00 Coffee

10:30 - 12:00 Concepts of Research, Management, Support, and Administration

12:00 Lunch

1:00 - 2:15 Hardware/Software Purchasing Decisions

2:15 Coffee

2:30 - 4:00 Case Study

4:00 - 4:30 Group Summary Presentations

### **Friday, May 31, 1991**

**8:30 - 10:00 Room 305 Agriculture Building, University of Manitoba**  
DOS, Word Processing, Operating Environment

10:00 Coffee

10:30 - 3:00 Spreadsheets

Saturday, June 1:

9:00 - 12:00 **Microcomputer Lab, Agriculture Bldg.**  
Management in the Macroeconomic Setting: Basics  
The Macro Economy; Performance Measurement  
Opportunity Costs/Interest Rates/ Returns to Public Investment;  
Capital Investment Analysis, Benefit/Cost Analysis, Domestic Resource  
Costs;other methods Micro-Computer Application  
(*J. Baffoe/E. Mupondwa*)

Evening

9:00 Social @ Holiday Inn  
Deer and Elk Rooms

Sunday, June 2

Free

**MODULE II: GENERAL PRINCIPLES OF MANAGEMENT IN THE  
AFRICAN SETTING**

**Monday, June 3, 1991**

- 8:30 - 12:00 **Holiday Inn South**  
Management in Africa Versus in the West: Are There Any Differences?  
(*M. Kiggundu*, Carleton University)
- 13:30 -16:30 **Holiday Inn South**  
Africa's Ten Most Important Management Challenges  
Issues of Macromanagement  
Managing Structural Adjustment  
(*M. Kiggundu*, Carleton University)
- 16:30- 17:15 Progress Report on Case Study 1 ( 5 teams @ 5 mins.); Discussion
- Evening: Work on Case Study 1; visit with *M. Kiggundu*

**Tuesday, June 4, 1991**

- 8:30 - 12:00 **Holiday Inn South**  
The Uzania Case Study  
(*M. Kiggundu*, Carleton University)
- 13:30 -15:30 **Holiday Inn South**  
Presentation of Case Study 1 -Midlandia Electric Power Co. ( 5 teams  
@ 20 mins.)  
(Evaluator: *M. Kiggundu*, Carleton University)
- 15:30 -17:00 **Holiday Inn South**  
Critical Managerial Issues  
(*M. Kiggundu*, Carleton University)
- Evening Team Work on Case Studies

**Wednesday, June 5, 1991**

- 8:30- 11:00 **Holiday Inn South**  
Extension Technology Transfer in a Government Setting  
(*T. Pringle*, Manitoba Agriculture)
- 11:00- 12:30 **Holiday Inn South**  
Mechanics of Management  
(*R.M.A. Loyns, E. Mupondwa, A. Janzen*)
- 13:30- 16:30 **Holiday Inn South**  
Gender Issues in Management  
(*D. T. Motsisi*, U. of Manitoba)
- 16:30- 17:00 Briefing: Discussion and Framework for Individual Project Presentations  
  
Progress Report on Case Study 3 (5 groups @ 5 minutes)

**Thursday, June 6, 1991**

- 8:30 - 12:00 **Holiday Inn South**  
Principles of Effective Management:  
Models, Elements, Requirements  
(*B. Owen*, U. of Manitoba)
- 13:30- 15:00 **Holiday Inn South**  
Principles of Budgeting: planning, time allocation, actual budgeting,  
monitoring and evaluation  
(*D. Berube*, Brandon University)
- 15:15- 16:30 Micro-management Cont'd: Application of the Principles in a Public  
Sector Setting  
(*B. Owen*)
- 19:00- 21:00 **Holiday Inn**  
Case Study 2: Budgeting the Workshop  
(*D. Berube, R.M.A. Loyns*)

**Friday, June 7**

- 8:30 - 10:00 **Holiday Inn South**  
Elements of Micro-Management: Task Assignment, Personnel  
Management and Development  
(*S. Bond*, Centre for Higher Education Research and Development,  
University of Manitoba)
- 10:15 -12:00 **Holiday Inn South**  
Management within a Higher Education Setting  
(*S. Bond*)
- 13:30 -17:00 **Holiday Inn South**  
Country Financial Management and Structural Reform:  
Debt & Foreign Exchange; Structural Adjustment;  
Implications for Agriculture & Resource Sectors;  
Implications for Research  
(*J. Loxley, J. Baffoe*)
- Evening Free

**Sunday, June 9**

- 17:00 BBQ at Loyns' Residence

**MODULE III: REQUIREMENTS FOR EFFECTIVE RESEARCH  
MANAGEMENT**

**Monday, June 10**

- 8:30 -10:15 **Room 530, Transport Institute**  
International Research Network  
(*A. McCalla*, University of California, Davis)
- 10:30 -12:00 **Room 530, Transport Institute**  
Canadian Involvement in the International Research Network  
(*G. Bourrier*, IDRC)
- 13:30 -15:00 **Room 530, Transport Institute**  
International Research Network and Sustainability  
(*A. McCalla*,)
- 15:15- 17:00 **Room 530 Transport Institute**  
Presentation of Case 3, using IDRC Proposal Guidelines- prepare project  
proposal (approx 4 pages) with budget, for your own institute  
(Evaluators: *G. Bourrier, A. McCalla, R.M.A. Loyns*)
- Evening Team Work on Case Studies

**Tuesday, June 11**

- 8:30 - 12:00 **Room 530, Transport Institute**  
Managing the Research Environment  
Research Program & Project Formulation  
The Research Proposal, Workplan, and Budget  
(*D. McLean*, Consultant, Ottawa)
- 13:00- 14:15 **Room 530, Transport Institute**  
Managing a Research Station  
(*R. McGinnis*, University of Manitoba)
- 14:30 -16:30 **Room 530, Transport Institute**  
Project Proposal Writing Cont'd  
(*D. McLean*)

**Wednesday, June 12**

- 8:30 - 12:00 **Room 530, Transport Institute**  
The Logical Framework as a Planning & Evaluation Tool  
Introduction to Monitoring & Evaluation  
(*D. McLean*, Consultant, Ottawa)
- 13:30 -14:45 **Room 530, Transport Institute**  
Strategic Planning  
(*J.I. Elliot*, University of Manitoba)
- 15:00 -17:00 **Room 530, Transport Institute**  
Monitoring & Evaluation Cont'd  
(*D. McLean*)

**Thursday, June 13**

- 8:30 - 9:30 **Room 530, Transport Institute**  
Description of the Tanzania- Canada project: Case Study on  
Management of Research and Production: Rationale & Criteria,  
Funding, Components: Research, Production, and Training  
Outputs  
(*Dr. Haki*, Tanzania, *J. Bole*, Canada Agriculture Research Station,  
Morden, Manitoba)
- 9:45 -11:45 Project Management  
(*J. Bole*)
- 13:30 -15:00 Research Station Management  
(*Dr. Haki*)
- 15:15 -17:00 Project Evaluation  
(*R.M.A. Loyns*)

**Friday, June 14**

8:30 - 12:00 **Room 530, Transport Institute**  
Present Case 4, Individual Projects, Evaluation and Feedback  
(Feedback: *R.M.A. Loyns, H. Mabeza, E. Mupondwa, L.B. Siemens*)  
(Evaluators: Peers)

1:30- 3:00 **Room 530, Transport Institute**  
An Evaluation Framework for the Workshop  
Feedback and Evaluation of Workshop  
(*A. Janzen, R.M.A. Loyns, H. Mabeza, E. Mupondwa*)

Evening

6:00 **Tartan Room**  
Banquet

**Saturday, June 15**

Departure

Appendix 2: Questionnaire Cover Letter

March 9, 1992

Dear Participants,

I am currently developing a model for evaluating a Research Management Workshop conducted by the Department of Agricultural Economics at the University of Manitoba, Canada. The Workshops are held once a year and they are for African graduate students studying in Canada.

Before using the questionnaire in the field I need to test it. You can help me in this exercise by doing the following,

- a) read through and edit the questionnaire
- b) complete the questionnaire, and
- c) react to the response pattern
- d) react to the general content of the questionnaire
- e) comment on the format of the questions/statements
- f) indicate the time taken to complete the questionnaire.

Thank you for your cooperation and help in this matter.

Sincerely,

Hlezipi Mabeza

Appendix 3: Questionnaire Used for this Study

University of Manitoba Research Management Workshop Follow-up evaluation

Dear Participant,

This is a questionnaire relating to the University of Manitoba Research Management Workshop which you attended during your graduate program in Canada. It is intended to find out the relevance of the workshop now that you are in your workplace. By taking part in this survey, you will help in guiding future events. Thank you for your co-operation.

A. Personal

Name: Mr/Ms..... Degrees held:.....

Permanent Address:.....

.....Phone: .....

Present Employment

1) Name and address of Organization: .....

..... Phone: ..... Fax: .....

| 2) Type of Organization (Please check)               | Main Activity of Organization                        | Your position                                        |
|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| <input type="checkbox"/> Government                  | <input type="checkbox"/> Research                    | <input type="checkbox"/> Senior management           |
| <input type="checkbox"/> University                  | <input type="checkbox"/> Policy Making               | <input type="checkbox"/> Middle management           |
| <input type="checkbox"/> Parastatal                  | <input type="checkbox"/> Extension                   | <input type="checkbox"/> First line management       |
| <input type="checkbox"/> NGO                         | <input type="checkbox"/> Teaching                    | <input type="checkbox"/> Professional                |
| <input type="checkbox"/> Private                     | <input type="checkbox"/> Development                 | <input type="checkbox"/> Other, please specify ..... |
| <input type="checkbox"/> Other, please specify ..... | <input type="checkbox"/> Other, please specify ..... |                                                      |

3) Please estimate percentage of your time that you spend in the following activities at present

| <u>Type of Activity</u> | <u>% Time</u> |
|-------------------------|---------------|
| Management              | _____         |
| Policy making           | _____         |
| Planning                | _____         |
| Coordination            | _____         |
| Administration          | _____         |
| Extension               | _____         |
| Research                | _____         |
| Teaching                | _____         |
| Conferences/study       | _____         |
| Other, please specify   | _____         |
| Total                   | _____         |
|                         | 100%          |

4) # of people you supervise:..... 5) Size of your operational work Budget/annum: US\$.....

6) Which year did you attend the University of Manitoba Research Management Workshop? .....

7) How long have you been working since you attended the workshop? .....

8) Other management courses you have attended:

| <u>Title</u> | <u>Date</u> | <u>Length(weeks)</u> | <u>Location</u> |
|--------------|-------------|----------------------|-----------------|
| .....        | .....       | .....                | .....           |
| .....        | .....       | .....                | .....           |

Evaluation

Below is a summary of the workshop objectives. Were the objectives achieved?

|                                                                             | Not at all | To some degree | Well | To a high degree | Fully |
|-----------------------------------------------------------------------------|------------|----------------|------|------------------|-------|
| a) Overview of skills and knowledge in management in an African environment | 1          | 2              | 3    | 4                | 5     |
| b) Awareness of principles and requirements of research management          | 1          | 2              | 3    | 4                | 5     |
| c) Communication, presentation, and group dynamic skills                    | 1          | 2              | 3    | 4                | 5     |
| d) Enable African students in Canada to share experiences                   | 1          | 2              | 3    | 4                | 5     |

Have you kept in touch with any of the workshop presenters or participants professionally or socially? Please give details

.....  
 .....  
 .....

How often do you refer to workshop manual?  Never  Seldom  Occasionally  Regularly

How adequate did you find the length of the workshop?  Too long  Too short  About right

To what extent were your expectations fulfilled?  Hardly at all  Partially  Fully

The composition by nationalities represented was:  Far too mixed  Too mixed  Just right  Not nearly mixed enough

The composition by disciplines represented was:  Far too mixed  Too mixed  Just right  Not nearly mixed enough

What were the strengths of the workshop? .....

.....  
 .....

What were the weaknesses of the workshop? .....

.....  
 .....

Please give suggestions for improving the workshop.

.....  
 .....  
 .....

Would you recommend this workshop to someone in professional circumstances similar to yours

(a) at the time of the workshop?  Y  N (b) in your present position?  Y  N, please explain.

.....  
 .....  
 .....

General Comments on the workshop:

.....  
 .....  
 .....

**B:  
Topics**

In this section we would like for you to rate the content, the usefulness, the presentation, and the time allotment for each of the topics included in the course. When rating **content**, you should consider such factors as rigor of material (theory, soundness, methodology). In regard to **usefulness**, rate the topic in terms of its applicability/relevance in your day-to-day work activities. Factors to consider in assessing **presentation** include clearness, logical structure, good use of visuals, etc. Please place a check in the box that most accurately represents your opinions of these factors.

| Topic                                                    | Content                  |                          |                          |                          |                          | Usefulness to Work       |                          |                          |                          |                          | Presentation             |                          |                          |                          |                          | Time Allotment           |                          |                          |
|----------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                                          | Exel-<br>lent            | Good                     | Aver-<br>age             | Fair                     | Poor                     | Exel-<br>lent            | Good                     | Aver-<br>age             | Fair                     | Poor                     | Exel-<br>lent            | Good                     | Aver-<br>age             | Fair                     | Poor                     | Too<br>Short             | Just<br>Right            | Too<br>Long              |
| Principles of Management in an African Setting . . . . . | <input type="checkbox"/> |
| 1. Managing Structural Adjustment . . . . .              | <input type="checkbox"/> |
| 2. Gender's Issues in Development . . . . .              | <input type="checkbox"/> |
| 3. Planning and Budgeting . . . . .                      | <input type="checkbox"/> |
| 4. Task Assignment & Personnel Management . . . . .      | <input type="checkbox"/> |
| Research Management . . . . .                            | <input type="checkbox"/> |
| 1. International research network . . . . .              | <input type="checkbox"/> |
| 2. Project Formulation & Proposal Writing                | <input type="checkbox"/> |
| 3. Logical Framework . . . . .                           | <input type="checkbox"/> |
| 4. Monitoring and Evaluation . . . . .                   | <input type="checkbox"/> |
| Computers in Research . . . . .                          | <input type="checkbox"/> |
| 1. Word Processing . . . . .                             | <input type="checkbox"/> |
| 2. Statistical Packages . . . . .                        | <input type="checkbox"/> |
| 3. Database . . . . .                                    | <input type="checkbox"/> |
| 4. Graphics . . . . .                                    | <input type="checkbox"/> |
| 5. Spreadsheets . . . . .                                | <input type="checkbox"/> |

#### Appendix 4: Open Ended Questions

##### Question B. 2

**Have you kept in touch with any of the workshop presenters or participants professionally or socially? Please give details**

- Not yet.
- The intention is to keep in touch with other participants but so far I have been swamped with work.
- No. (3)
- Yes, socially, cards sent out during Christmas.
- Socially when I was still studying at McGill, we had frequent contacts, but after completing my studies we have not been in touch.
- I have written to Dr. J.A. MacMillan and to Dr. R.C. McGinnis once after the workshop. I have also responded to the follow-up questionnaire sent immediately after the workshop.
- Yes, I have talked to my colleagues here at Kenyatta University who attended the workshop.
- Only one whom I am working with in the same institute.

##### Question B. 8

**What were the strengths of the workshop?**

- Active participation of participants and interactional learning among members handled well by some instructors although many other instructors failed to do this.
- The workshop was well planned and thought out. Effort was made to make the workshop applicable to backgrounds of different participants coming from different countries.
- The resource people.
- A great exposure to management issues useful especially to people with no management background.
- A great avenue to share common African problems.
- The group discussions and group presentations.
- Introducing the principles, knowledge and skills of management practices by experienced people to graduate student of various disciplines.
- It was very well organized and it exposed students to modern skills and facilities of research management.
- The training sessions relied on case studies relevant to many African institutions.
- Communication presentation.

Question B, 9

**What were the weaknesses of the workshop?**

- Stringent financial resources especially transport refunds were too mean and uncooperative.
- There was not much time given for participants to get a breather or digest the information they had received.
- The time was too short, hence the late hours and Saturday lectures, depriving participants time for socialising and sightseeing.
- To be candid, not anything appreciable.
- Too little time was devoted for computer work (i.e. practicals with computer).
- Poor realization of the workshop by some young students.

Question B. 10

**Please give suggestions for improving the workshop.**

- Increase duration of the workshop to a month.
- Increase active participation from learners - basically remove completely the tabular rosa view of the Third World which seems deeply ingrained among First World instructors.
- Financial bolts and nuts need lubrication.
- Try to balance the proportion of women to that of men.
- Allocate more time so that all the modules are covered thoroughly and participants get time to see the surroundings and to socialize.
- Keep the standard up.
- There is a need to add another week at least in order to have more time for computers.
- There is a need to add other professional contents in the course instead of concentrating mainly on agriculture.
- Invite someone from the African management setting, e.g. from ESAMI, Tanzania, or Mananga, Swaziland.
- Invite more experienced managers from Africa and other well known organizations like ISNAR, ICRISAT, etc.
- Organize on-job training for the other managers too.
- Africans already working here should be invited to give lectures on topical issues and research problems faced by those working in the African situation.
- Invite more African managers.
- Too much is covered in fairly short time.
- African experts who are working here in Africa are never invited to present real life cases.
- - help the latter to benefit from the experience of the former.
- Give more time to topics like spreadsheets for

- financial management.
- Next time it will be better to run the workshop in two languages, French and English, for the benefit of Francophones(2).

Question B. 11

**Would you recommend this workshop to someone in professional circumstances similar to yours? Yes or No, please explain.**

- Yes, it provides insights and direction of successful research or project management and administration.
- Yes, this workshop was an eye-opener and helped one not to look at management from a narrow perspective.
- Yes, the workshop enables everyone in management and/or research to acquire more skills in that area and improve performance.
- Yes, I found the workshop useful.
- Yes, most of the managers in developing countries, mainly in Africa do not have sufficient knowledge of management skills which leads to many inefficiencies. Thus, it is very important to train them, including those in government positions.
- Yes, it is important for those in my current position to be updated on modern skills in research management - many of them, especially in Africa, lack some of the skills.
- No, I would not recommend it to a student because there is a long period before they can apply the skills, but I would recommend it to someone who is already working.

**General comments on the workshop.**

- It was worth having it and useful tool to research and development.
- Very useful workshop for African graduate students studying in the West. Could also be conducted in Africa by newly returned MSc. or PhD. graduates.
- A very good attempt at exposing non-skilled managers to managerial skills and challenges.
- The workshop was quite good especially on learning the research methodologies and management skills.
- I had a very positive attitude for this workshop from the beginning and it helped me very much in my present position.
- It is a very essential thing that graduate students should pass through, as, in one way or another they will face it in their work.
- To be more effective and/or efficient in research, one has to get such a vital tool to widen one's opportunities.

- For me, it was one of the golden opportunities I had in my life.
- Thanks to the creative minds who initiated that workshop.
- It is a very useful undertaking especially for many of us from developing countries.
- Overall, good, well organized and most topics were conducted with professionalism.
- Good experience to encourage in developing countries.