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In presenting this paper to this session, I am defining the concept of statistical design to include establishing the framework for undertaking evaluations in developing countries, as a prerequisite to implementing strictly statistical operations for evaluation.

Evaluation of intervention projects is a new concept in most of the less developed world and as such, the attempts being made to evaluate projects and programs are beset with problems: technical, sociocultural, administrative and managerial as well as others. Some countries have an organizational commitment to evaluation, but do not have the technical evaluation expertise to carry out quality evaluations.

The United States has entered the evaluation arena in the less developed world, through the emphasis Congress is placing on evaluating the progress of the "New Directions" policy in foreign aid. Although this initiative was begun in 1973, only in the last few years has a program of evaluation of a scientific nature, been visible.

Data for evaluation of foreign assistance projects ranges from highly qualitative to highly quantitative. Between these two extremes exists the presently-being-undertaken "Bennet Evaluations," named after the Administrator of the U.S. Agency for International Development, who instigated these AID, in-house evaluations. The work the Bureau of the Census has undertaken has generally been more quantitative.

In this paper, I would like to describe some of the problems and the solutions we have devised in undertaking some of the more quantitative evaluations of AID projects. My emphasis will be more on general methodological problems rather than specific problems, in order to provide an idea of the evaluation work being undertaken and the exciting work waiting to be done. I will first describe some of the problem areas and constraints present in the developing world. I will then go on to describe an approach which meets and overcomes those problems and constraints.

Perhaps a word is also in order as to why the Bureau of Census is involved in evaluation of foreign assistance projects. The Census Bureau, as a sister agency, has a contractual relationship with AID to provide statistical advice. The major tenet of that agreement is to develop host-country capability in all areas of data collection operations and to assist host-country counterparts in conceptualizing, designing, planning, implementing, processing and analyzing data collection efforts in evaluation and in other areas. The emphasis, however, is on developing host-country capabilities.

Let us turn now to some of the generic problems that have to be faced in undertaking evaluations in the less developed world. These can be broken down into three areas: technical constraints, sociocultural constraints and management and administrative constraints.

In passing, I should mention that I am not presenting an exhaustive list of constraints to successful evaluation in less developed countries, but only examples from each group. In addition, for example, there are serious problems in such

things as travel and transportation, communications, printing and paper supplies, political upheaval at the local level occasionally preventing access and safety and many others.

#### Technical Constraints

There are three areas of technical problems I would like to discuss: informational, target population identification and operational field implementation problems. In less developed countries (LDC's), an evaluation is almost always begun *de novo*. There is usually little or no relevant information available on the subject-matter of the evaluation. Therefore, before planning is begun for data collection, the first step required is the development of a program of exploratory research to collect some information to determine basic concepts and limits. Without such a program, developing relevant, country-specific variables and indicators would be very problematical. As a result, developing and collecting relevant quantitative and qualitative information bearing on the evaluation's subject-matter is an arduous and time-consuming task in itself. An organized, structured method for obtaining data from administrative records, small studies and locally done surveys is required. Interviews with key local individuals are usually very helpful.

Identifying the target population for data collection purposes is also somewhat more difficult in less developed countries. There are generally no addresses and often no street names to identify housing units, commercial operations, local clinics, etc., in many areas in the less developed world. There are even fewer statistics on local populations identifying the basic characteristics of those populations, and as can therefore be imagined, there is usually no sampling frame which is usable for data collection purposes. Again, to precisely identify the study population in terms of location and characteristics is often a difficult and costly problem to resolve. These problems must be considered and resolved before any implementation can begin. These two areas are often ignored resulting in serious data collection failures.

The third area of technical constraints is operational field implementation problems which generally run the gamut of possibilities. First, very little expertise or knowledge in evaluation and data collection is present in most developing countries. There is however, a growing concern in evaluating projects and programs, not only for financial feasibility, but also for social and economic impacts. Secondly, data collection design, planning and implementation capabilities are either barely existent or where there is capability, tremendously overloaded. Quality statistical data are a recognized need in LDC's, which they are unable to meet adequately (and as we know from experience in this country, a need which will never be fully met). Oddly enough, there is often sufficient data processing capability in terms of machinery, but that is rarely matched with the human resource capability necessary to fully take advantage of it. As a result, there are cases of rooms full of data which will probably never be processed or fully utilized.

On the more positive side, one area of existing capability in developing countries is in the analytical sector. On-going policy and program analysis, as well as project analysis, is an area of relative strength in the developing countries. If quality information is available, the skills exist to productively use that information. The problem, as I have indicated, is the common difficulty of producing quality data. A secondary, related problem is that of the definition of data needs through the interaction of data users and data collectors.

#### Sociocultural Constraints

A second area of major constraints in undertaking evaluations in LDC's are sociocultural idiosyncrasies, almost all of which lead to problems of response error. I would like to mention just a few which are peculiar to LDC's.

In our data collection and evaluation efforts in LDC's, we are often faced with culturally-bound attitudes and perceptions. Often the interviewer must enumerate from multiple respondents because the people will not respond individually; other times a village leader must be consulted and be present at each interview, both of which could produce serious problems in response error.

We have also had experiences where respondents think the interviewer is trying to demonstrate his or her literacy by reading off the questions and as a result usually become annoyed and unresponsive. Using a structured questionnaire where the interviewer must rigidly follow and read each question could be counter-productive. Tremendous problems exist in translation to multiple dialects, a situation in many countries, usually with no one person understanding all of them. Shadings of meanings are practically impervious to translating accurately, a particular problem in perception and attitudinal studies. In addition, many dialects do not even have the form or structure to handle these shadings.

Illiteracy is endemic in some countries and there are often suspicious reactions to what the interviewer is writing down. Illiteracy also eliminates the use of some data collection prompting techniques such as diaries or journals, useful in many kinds of studies.

#### Management and Administrative Constraints

The last major area of constraints in undertaking an evaluation I want to talk about is the lack in LDC's, of the management and administrative organization which should be responsible for and authorized to, undertake evaluations. To philosophize just a bit, less developed countries send for training, and developed countries train a host of technicians such as engineers, statisticians, economists, sociologists and the like, but fail, as a high-level government official once told me in Brazil, in training staff for supervision and management of the technical staffs. Throughout my years in the international area, I have been impressed with the serious lack of trained managers in developing countries. Because of this, administrative and managerial concerns must be explicitly addressed.

In most all cases, an organizational unit has to be created to be responsible for evaluation. After its formation, it has to be staffed and the staff trained in evaluation techniques and theory in such a way as to become an effective management unit of the organization.

Surprisingly, the central staff generally has little acquaintance with actual field conditions (which are likely to be extremely variable in LCD's). This is mostly because they come from the capital city where they were trained and educated, they come from the higher socioeconomic class in that city and have little acquaintance with the greater (poor) majority of the population. A very small number come from the provinces and poor sectors of the population, but even they know little of conditions in other parts of the country. As a result, field trips must be organized and the staff has to be taught to recognize its own shortcomings in terms of perceptions and attitudes, and to question all the so-called facts and assumptions inherent in each member's background and training.

Partially as a result of the background of such a staff, there is often a great deal of resistance to doing the detail work of surveys and evaluation in LDC's - - an attitude which must be systematically broken down by showing the staff the probable resulting problems in not participating in that detail work. It must also be demonstrated through your own example. Obviously, this situation exists because there is usually little experience in any aspect of planning or management of complex evaluation and data collection projects.

Lastly, there is nearly always a shortage of experienced statisticians, data collectors and social scientists having any field or evaluation experience. Although one will find many economists who are experienced in analytical and theoretical areas, there are few who have experience relevant to undertaking and implementing evaluations. Instead, there will be business majors, engineers and other technicians as well as an occasional economist, who will make up the bulk of the staff for evaluation.

It is obvious by now from this litany that simple, single solutions would not begin to resolve these constraints and problems. Nor would there be any benefit to the host-country to ignore some or all of these problems or take on the responsibility for the evaluation ourselves.

We feel that the only way to deal effectively with the situation I have described, is to establish a long-term commitment with the host-country to develop fully the host-country capability. Initially, this is costly in terms of both human and financial resources as well as being very time-consuming.

However, the long-term cost effectiveness has overwhelming potential for the host-country as well as for donor organizations such as AID or the World Bank. Done comprehensively in the first instance, the host-country will obtain substantial benefits over time in the areas of expertise in evaluation and data collection capability. The approach advocated here is a solution which broadly falls under the rubric of "institutionalization" which is defined as developing a sustained, host-country capability. I would like to suggest that this institutionalization approach will properly address all the problems and constraints enumerated in this paper.

The U.S. Agency for International Development, in its agreement with the Bureau of the Census, has taken the position that there are two main priorities in evaluation -- developing evaluation capability and completing the evaluation, basi-

cally in that order. The development theory involved is that building a capability will have long-term benefits whereas spot technical assistance only meets short-term needs. This long-term approach must be comprehensive because partial coverage would not accomplish the organizational or technical objectives for the host-country. That is, there would be no established unit responsible for evaluation and data collection activities unless a comprehensive approach is used. Such an approach starts with developing an organizational unit, staffing it, training it and giving it practical experience.

The first step which must be completed is that an administrative and organizational operating unit must be established in the host-country ministry with the management capabilities necessary to run it. The staff must then be trained in the methods of survey specialists and evaluation designers in order to deal with the conceptualization, design, planning, implementation, processing and analysis of evaluative data.

The institutionalization program therefore, consists of a number of interlocking steps. First, developing the organizational units which will have not only the responsibility for carrying out the evaluation, but just as importantly, the authority to carry out an evaluation. Second is staffing that unit. In line or operating ministries, we have had unexpected success with counterparts from the technically trained staff such as engineers, as well as more expected success with economists and business majors. Next, training the staff in evaluation and data collection is combined with exploratory field work to identify major variables and to become familiar with field conditions. Subject-matter familiarity is not generally a problem when the unit is established in the line agency since the staff is usually already familiar with it from previous work. Also, generally there is a great deal of subject-matter expertise available in the agency. Problem definition for the evaluation evolves from the training and exploratory research, which itself is based on project and program documentation.

After the problem is identified and defined in a comprehensive manner, the focus shifts to planning how the information required should be collected and developing all the materials needed to accomplish that task. The latter includes everything from table plans and edit specifications to questionnaires and training manuals. At completion, fieldwork is undertaken followed by the processing of the data and evaluation analysis.

This kind of institutionalization may be spread over several years especially when comparatively sophisticated methods such as a quasi-experimental design using before and after information with interim monitoring, is being implemented. On the other hand, it may be a shorter period if more qualitative information or a less complex design is required for the evaluation. In many instances, some of the work may be done by contractors such as the fieldwork, the computer processing and even perhaps some of the statistical operations.

In any case, through careful technical assistance and monitoring, the problems and constraints I have enumerated in this program of institutionalization can be treated individually, but each one must be treated as an integral part of the

overall evaluation. Spot technical assistance is useful when there exists a thorough technical capability, but not for the situation where no integrated capability exists. Careful design and planning of technology transfer are the key elements.

There are some caveats and additional considerations which must be noted. First and foremost, for this process to be effective, it must begin before project implementation in order to have the time to set up administratively, train the counterparts and to do a baseline study (if that is required). Secondly, the use of local subject-matter expertise as well as other technical expertise, is necessary to fully anticipate needs and problems of evaluation in that country. The program of institutionalization to develop host-country capabilities is applicable not only to highly quantitative operations, but also to more subjective orientations. It provides a method and structure around which information gathering and analysis can be accomplished creditably.

One last point to be made is that there is some indication that in the more quantitative evaluations, the use of an anthropological or sociological investigation is very effective in the interpretation and analysis of the data collected by surveys. We are beginning to utilize coincidental investigations by anthropologists and rural sociologists to increase the explanatory power of the more structured survey interview data as well as in the exploratory research phase. This appears to be a very productive line of inquiry.

It might be useful now to illustrate how this process of institutionalization handles some of the problems and constraints which I outlined at the beginning of this paper.

Under technical constraints, I classified the problems in three areas: informational, target population identification and operational or field implementation problems. Informational problems are dealt with in the classroom and on-the-job training sessions and during the field trips which incidentally, are not inspection tours, but working trips. Getting the basic ideas for information needs together is included in the classroom sessions. From these classes and the definition of requirements, the design of the evaluation emerges. While this is happening, the various field trips provide experience in relevancy of the chosen variables and indicators. Local country experts are widely used at this point also.

Target population identification is a technical problem. After there is some exploratory research completed and a basic design begins to take shape, definitions for the target population are made explicit. To identify the people, households or other units of study, then becomes a technical problem. Usually this is developed by the host-country staff with assistance from an expert group such as the country central bureau of statistics or other data collection organization. We generally provide the assistance required for developing the sample frame.

Operational and field implementation problems are the basic issues for training. Using a live project (and all this training is developed around a live project), developing experience and expertise in evaluation, data collection and processing including training, questionnaire design, editing, coding, field operations, analysis and so forth,

is the bulk of the work to be accomplished. The accent is not only on getting each piece completed, but to inculcate proper planning and scheduling procedures, an attitude of constant self-questioning, a policy of maintaining high standards and the continual desire to improve upon the job at hand. These attitudes and perceptions are at least as important in the institutionalization process as the development of the materials.

In describing the sociocultural constraints, I indicated that most of them result in response errors. Issues of response error are dealt with extensively in classroom and practice. The field trips indicate the kinds of response errors which can be made. Pretesting and pilot studies hammer home the inevitability of response error. Developing the perception to foresee that there will be problems, admit that there are problems and changing procedures until those problems are resolved is as important as the changes themselves in accomplishing an adequate technology transfer. A great deal of time is spent on these issues throughout the period of cooperation.

Management and administrative organization problems are in some respects the most difficult to resolve. They involve working not only with the evaluation unit staff, but also with rival units and the unit's superiors. The counterpart staff, although well-trained in their own subject areas, generally feel they are more knowledgeable in planning and managing than they really are. The training has to be geared at a very challenging level yet not too high or low, nor at a level which they may construe to be condescending. A very sensitive approach must be taken and cognizance of cultural differences must be immediately and effectively incorporated. A true feeling or perception of working together and learning together must be established and sincerely followed. The enthusiasm and intellectual interest must be emphasized and inculcated.

An appreciation of the necessity for learning

all phases of the work and the satisfaction which can be derived from doing a job well, however small or large it is, must be keenly developed.

The high expectations which counterparts always seem to bring with them, have to be skillfully tempered in each situation to meet the facts of reality, and an obvious faith that your counterparts can do the work at a quality level, must always be evident.

In accomplishing this, it must be clear that the counterparts have to do all the tasks themselves in order to understand the interrelatedness of the work and to understand the tasks themselves. They should not know that in training them, you are doing parts of those activities in parallel to simulate their work and to understand the problems they are facing. In this respect, correction must be a two-way street and an attitude of constructive criticism has to be a reality. Many of the counterparts were trained in a rote-oriented learning environment where abstract problem-solving and thinking through problems is not heavily rewarded. We have to deal with changing this orientation on a continuous basis. At the same time, we have found that most of our counterparts have quickly risen to the new methods and challenges.

It is difficult and time-consuming to train U.S. staff in this arcane art of institutionalization and technology transfer. A sensitivity has to be developed to communicate and interact effectively with host-country counterparts at the operating level in an organization.

We are successfully working with counterparts in evaluating projects in agriculture, rural electrification, rural road projects, rural development, health, water systems and others in countries such as the Philippines, Thailand, Senegal, Indonesia, etc. The method is time-consuming and arduous, but we are convinced that the long-term benefits far outweigh the initial outlays.