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The uses of research introduction to four typologies.

THE USES OF RESEARCH: INTRODUCTION TO FOUR TYPOLOGIES[1]

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There is only one justification for supporting research in AID--that the results are needed to provide answers or guidelines for important problems of development in LDCs. This objective appears to have general acceptance both among those involved in the research program and those outside who have criticized it. So there is no conflict in objectives. The questions arise in terms of management questions related to selection of projects, rapidity of progress, and success in gaining utilization.

During the past few weeks, I have looked at much of the information available on the 144 research projects that have been financed by AID since the research program began 10 years ago. I joined AID in November after 15 years with the Rockefeller Foundation, so I am looking at AID research somewhat as an outsider. Yet with a very special interest because one of the tasks for which I was asked to join AID was to take and suggest measures to assure greater use of the results of AID research.

In order to obtain as complete a general picture as possible of the research program I looked first at the following data: 1) the report of the RAC committee that reviewed the research program in 1966, 2) the technical reports on each project submitted periodically by the contractor, 3) the replies from contractors to the query made last summer by Dr. Long in regard to the utilization of results of research, 4) the information compiled in "The AID Research Program

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1962-71: Project Objectives and Results" by Glenn McClelland.

Then we formulated a questionaire to be filled out in each case by a very knowledgeable person about each completed and on-going research project. In most cases the respondent was the AID monitor of the project. Part of the results of this query are incorporated in the appendix of Dr. McDermott's paper and the remainder form the appendix to this paper.

In looking closely at AID research--both the completed projects and the on-going ones that make up the present program--one fact stands out. This is a very broad assortment, not only in terms of subject matter fields, but also in terms of the expected end-products of the research. There is a need for a conceptual framework for categorizing projects according to end-product objectives. I find it useful in this case to look at knowledge production and dissemination as a continuum with difference in degree rather than kind, going from the most creative type of knowledge production through adaptation studies and on to ultimate use of a practice or product. Because of the different states of knowledge and different kinds of information needed on different development problems, the most useful role of research will also be different in each case. In some cases a product, embodying knowledge, can be transferred from one area to another without modification, and simply requires testing for adaptation, e.g. flashlight batteries, dwarf wheats. In other cases, products cannot be transferred, but methods for producing them can, e.g. hybridization of corn, soil testing procedures for determining rates of fertilization, etc. In still other cases, the problem is one that was not serious in presently developed nation with the result that basic knowledge is lacking, e.g. tropical diseases, special problems of tropical

soils, technically efficient and socially acceptable family planning methods. This last kind of problem may require research toward the more basic end of the continuum.

The completed and ongoing projects reflect a wide range of goals in terms of the ultimate utilization anticipated when the research project was funded. It would be highly misleading to set up a single set of criteria for measuring the impact of the projects.

For this reason what we have done in this evaluative study is to obtain for all projects certain general measures of the results obtained, dissemination and utilization* and then move in to look more closely at a small number of projects which fall into different types in regard to expected utilization of results. We have identified four important types of research in respect to expected uses of the research results. These types are not mutually exclusive and there are additional types. However, each of the four is important and a careful analysis may be expected to yield useful insights.

The types are as follows: (1) production of knowledge for use at the policy level, (2) research not immediately applicable but showing promise of significant benefits later, (3) research to produce or test a new product, and (4) international research networks for production and two-way flow of knowledge.

Research for Use at the Policy Level

Projects designed to produce knowledge for use at the policy level are distinctly different from those designed to produce a new seed or a new pill. This also has important implications in selecting channels for dissemination and the kinds of audiences

*See appendix

that should be reached. Whereas information on new seeds should reach a vast number of small individual decision makers in less developed countries, information on more effective price policy may have its desired impact if it reaches a handful of key individuals within AID or in a planning ministry of an LDC. Number of journal articles published or number of airgrams sent out, are intermediate measures of dissemination, but give no indication of impact. The first measure of success is, of course, whether significant new knowledge was produced. The subsequent action, for which the research program and all bureaus have equal responsibility is to insure that the new knowledge is used.

For a close look at the uses of policy research, Ted Rice and Glenn Lehmann have chosen six projects of the PPC for careful study.

Research with Promise of Significant Benefits Later

The early work of AID and other development assistance organizations was initiated under the hypothesis that a vast body of useful knowledge already existed in the United States and the required task was to introduce this knowledge in the LDCs and thus bring about development. The limitations of this approach are now generally recognized so that I shall not go into them here. Perhaps the farthest swing away from this approach in our present research program is the work being done on developing a vaccine against malaria and some of the work being done in the population program to develop the technology for family planning programs. Congress has given the population

program a high priority in the overall structure of AID activities and along with this has removed the limitation on the amount of money which might be invested in research for this activity. This has made it possible in the population program to pioneer new approaches which are expected to yield the basic knowledge needed to slow down the staggering population growth now occurring in many of the developing countries. In this case the overall goal of the research is to produce knowledge that may be used to rapidly reduce population growth. The objective of a specific research project may be to produce the basic knowledge needed for the next step in producing a specific product which may then lead to that end goal. Dr. Ravenholt will discuss this, "research that is not immediately applicable but shows promise of significant benefits later."

Research to Produce or Test a New Product

The third type of research is that designed to produce or test a new product. Agriculture has been involved in several successful projects of this nature. In many cases the research projects have complemented general technical assistance projects in such a way as to develop new varieties of cereal crops and grain legumes and get them used in developing countries. A list of these projects as well as all others conducted under the AID

research program during the past decade is included in "The AID Research Program 1962-1971: Project Objectives and Results." Several have also been reported in the publication, War on Hunger, including the project to develop farm equipment for production of rice on small holdings in the Far East and South Asia. This already has resulted in the design of five machines that have been tested and are now being manufactured by private firms -- a power weeder, a row seeder, a table thresher, a drum thresher, and a grain cleaner. Under another contract the Tennessee Valley Authority is developing fertilizers specifically for application on rice. The project that we will look at today is in the field of nutrition. It focuses on biological testing of new protein foods and is having an enormous impact on nutritional programs in various parts of the world as we will hear from Dr. Graham this afternoon.

International Research Networks

The fourth type of project is one in which AID experience is relatively recent but which appears to offer substantial promise for the future. This is the international research network for production and two-way flow of knowledge. The idea here is to perform a catalytic function in working with other independent research organizations. Many LDCs now have a small corps of well trained scientists although their research institutions in general

are still weak. Given this kind of a situation what kind of an input can a single Agency, such as AID, make to strengthen the work at all of these institutions? One approach is that of the international centers such as IRRI in the Philippines and the corn and wheat center in Mexico with joint financing from international institutions. Another is that being tried by AID in the contracts for sorghum work at Purdue and the development of high protein wheats at the University of Nebraska. In these cases the contractor provides chemical analyses and serves as a clearing house for information and genetic material in order to stimulate more rapid progress in the production of locally adapted varieties with higher protein content and better quality.

The intriguing thing about a research network, focussed on a particular subject such as improvement of protein quality and quantity through genetic improvement of the wheat plant, is the probable high returns at the margin. Most LDCs are now financing permanent research institutions in agriculture. Each has a group of research personnel, experimental fields and some laboratories, and a research program underway. The progress of each is restricted by lack of information about what the others have learned, and all are limited by inadequate testing of their genetic materials. Further, most have been focusing on total yield with little attention to protein quantity and quality,

again because of the difficulty of obtaining reliable and prompt laboratory tests for protein. This is where the AID contract at Nebraska fits into the picture and we will hear that story this afternoon from Drs. Litzenberger and Mattern.

As we analyze these papers, I hope that we can trace out the web of relationships between the project, the information channels and the ultimate users of the knowledge produced. We will likely find that the desired utilization of results will have a direct learning on the selection of information channels and the target audiences. The focus is not on measuring success or failure, but on obtaining a better understanding of information flow and how best to attain utilization of results from different kinds of research.

TA/RUR

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THE USES OF RESEARCH

Data collected by questionaire on 144 completed and on-going projects that had been funded as of March 1971.

GENESIS OF THE RESEARCH PROPOSAL

Unsolicited (proposed from outside the Agency)	33
Solicited by central staff	34
Solicited by Regional Bureau	3
Solicited by Mission and host country	1
Originated jointly by AID and research institution	66
Solicited by another U.S. Government agency	1
Unable to determine	6
	144

PURPOSES OF THE RESEARCH

	Primary	Secondary
Problem solution	63	69
Improved product or practice	40	29
Produce info. for improved policy decisions	40	24
Produce info. for creation or modification of organizational structure	6	27
Produce info. to modify individual behavior of the populace in LDCs	2	13
	151*	162*

*more that 144 because of multiple answers.

The major point for application of research results

U. S. institutions or international agencies	41
LDC institutions	71
Specific sectors of populace in LDCs	32
	144

Training and institution building goals of the research

Prepare LDC personnel and institutions for research and development	62
Prepare U.S. Personnel and institutions for work on LDC problems, research	48
Consulting emphasis	8
Influence LDC policies and procedure in institution building	23
Develop information useful to others	56
	197*

*more than 144 because of multiple answers

Research methodologies

Library research in U.S.	22
Lab research in U.S. (including analysis of field research materials in the U.S.)	51
Field research in U.S.	18
Lab research abroad	28
Field research abroad	100
Feasibility study mainly	7
Consultancy arrangement mainly	5
Conference	1
Produce training materials	1
Library research abroad	1
	234*

*more than 144 because of multiple methods.

PARTICIPATION OF INSTITUTIONS IN RESEARCH PROGRAM

Other U.S. Institutions, public and private	60
Host country personnel but not institutions Host country institutions	122
International agencies	28
Other bilateral assistance	4

PARTICIPATION IN RESEARCH BY REGIONS

	Number of projects
Latin America	59
Africa	21
NESA	23
East Asia	30
Worldwide	18
United States only	31
Not Applicable	4

Number of countries affected by research program

Number of countries	Where research carried out	Where results disseminated	Where results utilized
one	66	18	27
two	16	7	12
three	7	4	4
four	12	3	5
five	8	3	7
6-10	17	6	8
11-15	6	4	2
16-20	2	9	1
21-45	5	6	3
worldwide	3	42	5
too early to know	2	19	18
none	0	13	16
unknown	0	9	35
Internal AID	0	1	1
	144	144	144

Number of Regions Affected by the Research Program

Number of regions	Where research carried out	Where results disseminated	Where results utilized
one	88	28	37
two	18	13	16
three	9	6	7
four	7	1	3
five	17	54	11
too early to know	2	14	18
not applicable	3	5	4
none	-	13	16
unknown	-	9	31
Internal AID	-	1	1
	144	144	144

TYPES OF RESEARCH CONTRACTORS EMPLOYED BY AID

U.S. University	76
U.S. non-profit institution	36
U.S. profit making institution	8
Other U.S. government agency	22
Foreign based contractor	7
	149*

*including four with two and three contractors

MANAGEMENT OF PROJECT: REPORTS

No reports filed	16*
Progress reports filed irregularly	30
Progress reports filed regularly	98
	144

*including several recently initiated projects

Management of Project: Annual Review in Washington

No Reviews held	29*
Occasional reviews held	74
Periodic reviews held	39
Unknown	2
	144

*including several recently initiated projects

Management of Project: Site Inspections

No inspections held	41*
Occasional inspections	74
Periodic inspections	28
Unknown	1
	144

*including several recently initiated projects

Dissemination of Results: Number of Publications

None	19*
1-5	64
6-10	14
11-20	5
21 or more	32
Unknown	10
	144

*including several new projects

Kinds of AID publications or reports

None	5
Technical reports required by contract	129
AID airgrams reporting on research	49
AID airgrams transmitting publications	34
Report in Front Lines	4
Report in War on Hunger	18
AID/W directives to USAIDs	7
Special reports and in-country research notes	2
Unknown	6

Kinds of Non-AID Publications

None	18*
Articles in professional journals	59
Research papers or monographs	80
Books	32
Articles in semi-technical publications	28
Theses	3
Research bulletins	2
Miscellaneous: theses, research bulletins, popular bulletins, technical drawings, etc.	9
Unknown	16

*including several new projects

Distribution of Research Publications

None	23
Only in U. S.	10
Only abroad	4
U. S. and abroad	92
Unknown	15
	144

Dissemination of Results at Seminars and Workshops

	in the U. S.	Abroad
None	50	53
1-2	23	15
3-4	13	9
5-6	7	6
7 or more	5	8
Unknown	46	53
	144	144

Dissemination of Results through LDC Involvement in Research

None	24
A little	31
Moderate	31
Substantial	46
Unknown	12
	144

General Evaluation of the Research Projects by AID Monitors

	Unsatisfactory	Average	Outstanding
Overall, how do you rate the project in terms of having produced or potentially producing results to meet its defined objectives	23	81	38
Were the research objectives clearly defined	3	103	37
Was the project carried out on schedule	13	104	21
Were the research design and methodology adequate	2	105	34
Were the investigators competent to do this research	1	62	80
Were the administrative arrangements adequate	6	108	29
Was the funding adequate	0	110	33

NOTE: The figures do not total 144 in all cases; for some new projects the questions could not be answered as yet.

Evaulation by AID Monitors of the Utilization of Research Results

	Unsatisfactory	Average	Outstanding
Overall, how would you rate the utilization to date of results of this research project	14	83	24
Dissemination of Results	7	92	28
Involvement of host country personnel in producing research results	4	79	32
Actual or planned translation of research results into LDC language	12	63	32
Actual or planned adaptation or results for local use	13	67	24

NOTE: The figures do not total 144 as some projects are too new to register utilization,

Potential Impact of On-going Projects as Rated by Project Monitors

	Unsatisfactory	Average	Outstanding
Potential impact of the project on the problem to which it is addressed	0	9	42
Severity of problem over a multinational area	0	14	48
Importance to attainment of USAID objectives	0	16	46
Timeliness of the research relative to LDC's personnel and institutional ability to absorb and apply results	0	22	37

Impact of the Completed Projects as Rated by Project Monitors Or Other Knowledgeable Persons

	Unsatisfactory	Average	Outstanding
Actual impact of the research results on the problem addressed by the research	12	52	15
In terms of known number of adopters	8	36	11
In terms of demonstrated economic and social gains from adoption	9	37	8
In terms of modification of policy positions	10	43	11
In terms of the importance of the problem area over a multinational area	3	55	24

Quality of Results Produced Related to Duration of the Project

Duration (years)	Unsatisfactory or Low Average	Outstanding
1	2	6
2	5	9
3	6	7
4	1	5
5	-	9
6	2	2
7	-	6
8	-	3
10	1	4
	17	51

	Unsatisfactory or "Low Average"	Outstanding
3 years or less	13	22
4-10 years	4	29
	17	51

How do you rate the research project in terms of having produced or potentially producing research results that have met or will meet its defined objectives? (Those rated "average" are not included in this tabulation.)

Present Status	Unsatisfactory or Low Average	Outstanding
Completed (86)	16	24
On-going (58)	1	27
Main Thrust		
Technological (65)	4	23
Soc-Econ-Cultural (79)	13	28
Total Financing		
Up to $100,000 (39)	10	7
101 to 500,000 (58)	5	20
501 to 1,000,000 (20)	2	5
Over 1,000,000 (27)	0	19
Average Financing Per Year		
Up to $100,000 (71)	12	19
101 to 500,000 (60)	5	31
501 to 1,000,000 (4)	0	1