

Measuring the Impact of Information on Development: Overview of an International Research Program

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(with an Appendix by José-Marie Griffiths)

Background to the Research Program

What is the link between "information" and "development?" This is the fundamental question driving an international research effort that was launched by Canada's International Development Research Centre (IDRC) early in 1992. The purpose of this paper is to provide a brief introduction to the research program and to serve as a guide to the proceedings of a workshop on this subject that took place at IDRC in July 1995.

Terms such as "global information highway," "information revolution," and "information economy" are used routinely to illustrate the profound role of information in modern societies. Yet it is easy to make unverified assumptions about the nature of benefits being generated in an "information society." Despite the high profile enjoyed by information issues, especially those involving new information technologies, it is perhaps ironic to find that many library and other information services are feeling increasingly vulnerable in the tight funding environment that is prevalent today.

This situation has fueled an increasing number of studies in recent years on the relevance, usefulness, value, and impact of information in various settings. Relevant publications include, for example, "Special Libraries: Increasing the Information Edge" (Griffiths and King 1993), "The Impact of the Special Library on Corporate Decision-Making" (Marshall 1993), "The Value and Impact of Information" (Feeney and Grieves 1994), "The Value of Information to the Intelligent Organisation" (HERTIS 1994), and many others could be listed.

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Hopefully, this growing body of knowledge will be used effectively to ensure that the significant practical contribution of the information infrastructure is fully recognized and strengthened accordingly, not neglected and eroded.

Against such a backdrop that illustrates the evolving information climate in industrialized countries of the North, what is the picture emerging in the developing countries of the South? It seems reasonable to assume that information holds great potential as a powerful and reusable resource for development. It is an essential input, catalyst, and product of change. Information can be a precious fuel in the process of transformation taking place in developing societies. Despite this impressive potential, however, there are many economic, technical, political, and other constraints that prevent it from being realized.

In a funding environment so much more difficult than the one enjoyed in the North, there is even more urgency to demonstrate the value and impact of investing in the information sector. Perhaps one could argue that the developing countries need only observe the conspicuous role of information in the North to see the benefits of accelerating their local investment in this sector. But such an approach would ignore the different perceptions of need and benefit held in different societies. It would fail to acknowledge the extent of competition for severely limited financial resources.

This is not to ignore the valuable inputs provided by certain studies generated in the North; the impressive chapter by Badenoch et al. (1994) on "The Value of Information" is a case in point (who could argue with its opening sentence: "There is a very good reason why the 'value of information' is a neglected and under-researched subject: it is well nigh impossible to establish an agreed definition of what we mean by the terms.") Nevertheless, the primary rationale for strengthening the role and use of information must be based on circumstances and priorities that have direct relevance to the South. The current research program is a response to that need.

Statement of the Research Problem

The nature of the research problem has been described in a related publication (Menou 1993, p. ix), and is worth restating here:

Although we have witnessed a steady growth in the provision of information services in developing countries, a number of fundamental questions remain unanswered. The people of these countries question the relevance and appropriateness of the services offered. Development assistance agencies are concerned about problems of sustainability. The extent to which information services actually contribute to the empowerment of people and the accountability of the institutions

concerned are subjects of controversy and debate. Logic dictates that information is an essential resource for the social and economic development of Third World countries, but how can this be demonstrated? How tangible is the linkage between information investments and the achievement of specific development goals? The limited status accorded to information in most developing countries suggests that its potential value is not self-evident.

The assessment of development efforts in information infrastructure and services has mainly relied upon measures of input and immediate output. Although information specialists may claim, for example, that a 5,000 record database is now operational, policymakers and decision-makers understandably look for a clear indication of its overall socio-economic benefits, and ask 'so what?'.

The answer, so far, has been axiomatic. It is expressed in sentences such as 'Information is the most critical resource and plays a fundamental role in development'. Yet there is no systematic body of empirical evidence to support this assertion, especially quantitative evidence. Unless a more appropriate answer is found, people involved in information-related programs will have difficulty justifying a high level of priority and a share of scarce resources compared with those in disciplines whose relationship to development is better established.

This is the challenge that prompted IDRC to create the current research program. In essence, the research program is seeking an answer to the specific question, "What is the impact of information on development?" This is a simple enough question to pose, but the complexities of interpreting it, exploring the various elements of a response, and formulating a viable research program have proved no simple undertaking.

Indeed, the scarcity of previous work in this domain is leading the research program to break new ground. It is worth taking a moment to clarify the scope of the program and its objectives. Clearly, as noted earlier, others have been investigating different aspects of the value and impact of information. But there are limits to the relevance of these studies to the central issues being explored here:

- The vast majority of previous studies describe approaches and experiences from a Northern perspective in industrialized countries that have a different information tradition and infrastructure than in the South.
- Much of this work in the North is confined to a particular organization or sector, rather than providing a more comprehensive assessment of the larger "impact" question.

- Although there are numerous studies and guides for helping information managers evaluate the performance of a particular information service, these often involve simple quantitative measures such as counts of visitors, inquiries, or loans, and perhaps a survey of user opinion, and they seldom attempt to find an answer to the more probing "so what?" question.
- Many of these studies interpret "impact" in a rather short-term sense related to immediate effects of information on the user community, rather than on the longer term consequences of the use of that information.

Goal and Outcomes of the Research Program

The research network that IDRC is supporting is somewhat ambitiously attempting to measure the impact of information not on a particular individual or institution, but on development. The term "development" is used here as shorthand to describe the complex process of change that is taking place in less-industrialized societies. "Impact" in this sense involves demonstrating the social, cultural, economic, political, environmental, and other benefits that are associated with the consequences of making effective use of information and, indeed, the problems or missed opportunities associated with not having (or not using) information.

The program is not focused at the level of indicators for evaluating the performance of an individual library or information service. It is situated at the other end of the spectrum, where it is exploring the role that information systems and services play in bringing about more widespread improvements in social and economic conditions.

The declared goal of the research program, therefore, is to devise and apply a methodology for measuring the benefits and impact of information on development. But even this daunting task cannot be the end-point, for the real impact of this research program will be achieved through the effective use of its findings to bring about a shift in attitudes toward the role of information in development, corresponding shifts in development policy, an increase in the allocation of funds to be invested in this field and, ultimately, an improvement in the management, role, and use of information as a strategic resource for development.

Thus there are three compelling reasons why it is important to pursue this investigation into the relation between information and development impact:

- A more convincing demonstration of the benefits could encourage developing countries to take better advantage of their information resources.
- A clearer understanding of the relationship between project inputs, outputs, and outcomes could improve the design of systems and services and help select the most cost-effective options.
- Recognition of the social and economic returns on investment in information activities is likely to strengthen their financial viability and, hence, their long-term sustainability.

Yet, despite the significance of these intended outcomes, this is an area of information science research that has been left largely unexplored. To be sure, there have been some previous contributions that have moved beyond the anecdotal. The paper by Boon (1992), for example, is one that touches on a number of the issues being addressed in the IDRC-supported research program.

Slightly more familiar are studies that have focused on the development impact of introducing information technologies, e.g., Ang and Pavri (1994), CABI (1995), and Hanna and Boyson (1993).

The bibliography compiled by Chataway and Cooke (this volume) identifies additional writings of some relevance. But more searching examinations of the relationship between information and development are few and far between. There are several understandable reasons for this paucity, including the complexity of the task, the number of external variables that can affect information usage, the lengthy timeframe for demonstrating results, the difficulty in extrapolating from one information site to another, the volume of data that must be processed, the multidisciplinary nature of the research, and the considerable cost of mounting a meaningful research program. Nevertheless, despite these formidable obstacles, there were some who still believed that the importance of the goal clearly merited a concerted international response.

Launching the Research Program

Research Framework and Outputs

The international response was formally initiated in 1992 by Martha Stone of IDRC. Acknowledging that no single institution had the human, financial, or information resources to mount an effective exploration of "impact," IDRC has encouraged several interested researchers to join forces at various points in a long-term, multiphase program of work. The principal components of the four stages of the research program are:

Stage I	Exploring the feasibility and scope of a substantive investigation of "impact."
Stage II	Formulating an appropriate methodology for assessing the impact of information on development.
Stage III	Implementing and refining the methodology through several case studies and associated research.
Stage IV	Reviewing and disseminating the findings for greatest effect.

The specific outputs from this research program are expected to include:

- A detailed description of a tested methodology for assessing impact, incorporating feedback from case studies, workshops, and associated research.
- A compilation of documented case studies describing the impact of information in different development domains.
- A practical handbook or similar presentation of the impact methodology, illustrated by the case studies, and incorporating related material to encourage maximum benefits from the process.
- Several contributions to the scientific literature on experience gained and lessons learned while undertaking the various stages of this research.
- An international network of individuals and institutions collaborating on further dimensions of the "impact" problematique.

These outputs will be applied toward bringing about the intended outcomes described in the preceding section, i.e., the shifts in perception, attitude, policy, and investment toward information activities and their role in the development agenda.

Completing Stages I and II

Stage I, i.e., the in-depth analysis of relevant concepts, previous work, and possible new approaches, began in April 1992 with an exploratory workshop at IDRC Headquarters in Ottawa, Canada. The discussions continued over the next 8 months via a structured computer conference moderated by Michel Menou. The core group of participants included 16 specialists drawn from the private, government, and academic sectors in North America, Europe, the Caribbean, Latin America, and the Middle East. An additional group of 13 specialists served as a consultative panel, providing feedback in response to periodic summaries of the conference proceedings. The major product of Stage I was a comprehensive report that dealt with definition of concepts, different types of benefit and associated

measures or indicators, procedures for gathering data, and possible approaches to assessing benefits and impact.

This report was the primary input to Stage II of the research program, during which the conclusions of the computer conference were examined and validated and were used as the basis for formulating a practical methodology for assessing the impact of information on development. Stage II took place in February 1993 in Nairobi, Kenya, using a facilitated workshop format. The 15 participants included five from the original computer conference to provide some continuity; most of the additional participants were senior professionals from developing countries. The deliberations at the workshop succeeded in drafting a framework for impact assessment, including a methodology that was appropriate for field-testing in a series of case studies.

In keeping with the objective of sharing experience gained during this lengthy research effort, a number of items have been published or are in press. Most notably, IDRC published a monograph providing a detailed account of Stages I and II, including the assessment methodology, illustrative annexes, and an extensive bibliography (Menou 1993).

A related need identified during Stage II for a practical guide to help information managers perform benefit-cost analysis led to another IDRC publication (Horton 1994). An evaluation of the computer conference used in Stage I is reported in the current publication (Thorngate and Balson this volume). In addition, and perhaps more widely accessible, some shorter pieces have been published in the information literature (e.g., Stone 1993; Stone and Menou 1994). To help readers interpret the case studies that are reported later in this publication, a brief overview of the assessment methodology is provided here.

Proposed Impact Assessment Methodology

The following outline has been based on Chapter 6, "Preliminary Framework for Impact Assessment," contained in the IDRC monograph (Menou 1993). The first seven are prerequisites:

1. Define the user community.
2. Define the development issue and program to which the information activity or project is contributing.
3. Identify the main patterns of operation of the information life cycle and the factors that influence its effectiveness for the defined user community and development issue.
4. Describe the target audience to whom the findings will be directed.

5. Describe the information use environments (IUEs) of the user community and the target audience.
6. Set up standard guidelines for collecting, analyzing, interpreting, and presenting anecdotes and other data.
7. Assemble baseline data.

Next, working collaboratively with representatives of the various groups of beneficiary (including end-users and target audiences), determine the perceived or expected benefits of their work that might be linked to information activities and products.

8. Determine which primary objectives are being served and their outcomes.
9. Develop a hierarchy of the objectives or outcomes.
10. Define corresponding outputs and the required inputs.
11. At each level of the hierarchy, identify critical factors that are either "informational" in nature or are information-dependent.
12. Define the indicators in the framework that would show that the appropriate information input is secured and improved.

The methodology goes on to map out a model showing permutations of variables:

Object of Evaluation (e.g., program, project, service, specific activity, product).

Evaluation Perspective (e.g., information service provider, user - actual and potential, beneficiary, donor agency, the community).

Generic Assessment Measures (e.g., in relation to inputs required to perform the information activity, outputs, usage, outcomes, and the particular domain under study).

Derived Measures, or Indicators

Five types of assessment indicator are identified:

1. Performance indicators, relating inputs to outputs.
2. Effectiveness indicators, relating outputs to usage.
3. Cost-effectiveness indicators, relating inputs to usage.
4. Cost-benefit indicators, relating inputs to outcomes.
5. Impact indicators, relating usage to outcomes (and domain characteristics).

Once the data have been gathered, analyzed, and the relationship between inputs, outputs, and benefits/outcomes has been determined, a strategy must be developed for communicating the findings to the target audience(s). Being aware of their perceptions of critical issues and benefits is essential; obtaining this information is a key step in the methodology outlined in the foregoing. The assessment results can then be repackaged in the most effective way.

The methodology outlined here was derived by professional information managers and others, but it is still a theoretical construct. It encompasses many steps that may not prove feasible in practice. It may not deal adequately with certain aspects. But it does provide a basic framework that can serve as a common starting point for testing via case studies.

Stage III — Moving from Theory into Action

Stage III is the "action-research" phase. The theoretical concepts and methodology produced as outputs from Stages I and II must be tested in real life environments. The approach taken has been to develop a series of specific case studies in different information domains. The case studies will attempt to apply the provisional assessment framework and, in so doing, provide practical feedback on its use, devise improvements to the methodology, and identify operational and other issues needing further attention. In addition to this set of case studies, as noted in the following, some further action-research work also has been initiated to help illuminate other aspects of the "impact" question using field-testing.

Case Studies

Two of the reasons why this research area has seldom been explored in a comprehensive way are that it requires a commitment to longitudinal studies (rather than brief surveys) to reveal the consequences of information use over the longer term, and it requires examples drawn from different information settings to reveal the extent of applicability of the approach and transferability of findings.

In this research program, however, it has proved possible to assemble an interesting mix of case studies. To increase the level of confidence in the results, the case studies have been selected from different geographical and information environments. They have been drawn from Africa, Asia, the Caribbean, and Latin America, and different characteristics of information activities (e.g., extent of local/regional coverage, single/multisectoral, types of user, types of target audience) have been taken into consideration.

1. **Single Sector, Regional Network Serving Senior Policymakers (Latin America)** This study is a collaborative effort between the Centro de Investigacion y Desarrollo de la Educacion (CIDE), Santiago, Chile and Carleton University, Ottawa, Canada. Its primary focus is to assess the impact of CIDE's education information network (REDUC) on ministers and senior bureaucrats in the education field in Mexico and Central America.
2. **Single Sector Information System Serving an International Research Community (Asia/Africa)** The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is located in Hyderabad, India. This is one of a global network of International Agricultural Research Centres (IARCs) supported through a consortium of donors. This case study is examining the impact of SATCRIS, the semi-arid tropics research information service maintained by ICRISAT.
3. **Regional Information Infrastructure (Electronic Communication in Africa)** The United Nations Economic Commission for Africa, through its Pan-African Development Information Systems (PADIS), has been active in promoting the introduction and use of electronic communication. This case study is exploring the impact of using electronic communication in selected countries.
4. **Provision of Community-Level Information (Africa)** The Department of Library and Information Studies, University of Botswana, has been researching the provision of information for rural development in Botswana, Malawi, and Tanzania. The case study is looking at information needs of the community and the impact of gaining this information.
5. **Regional Study, Information and Policy Formulation (Caribbean)** The Documentation and Data Centre of the Institute of Social and Economic Research, University of the West Indies, is focusing its study on the information needs of a target group of senior policymakers from the English-speaking Caribbean and their subsequent use of the information provided.

6. **Multisectoral Study, Regional Information Networks (Caribbean)** The Caribbean Community Secretariat in Georgetown, Guyana, helps coordinate several regional information services, including agriculture, trade, industry, etc. This case study is examining the impact of these information services on decision-making, research, and action in different sectors.

Research Studies

These six case studies will follow, more or less, the methodology proposed in the preliminary framework for impact assessment. Clearly, however, the framework is not complete; nor does it preclude refinements or the pursuit of alternative approaches.

To provide further insight on methods for exploring the link between development action and information, IDRC is supporting an investigation into a variation on the methodology; instead of relying primarily on questionnaires about the use of information to highlight causal relations between information and action, the technique of causal modelling is being attempted, using the Linear Structural Relations (LISREL) software to perform the statistical analysis. The research will involve pilot projects in Canada, being conducted by the University of Western Ontario and the University of Toronto, and then move to more extensive testing by the Institute of Scientific and Technical Information of Shanghai, in China.

Reporting on Progress — The Ottawa Workshop

The most recent impact workshop, held at IDRC in July 1995, was scheduled as an essential milestone within Stage III of the international research program. The case studies and associated research projects were initiated in 1993 and 1994 following completion of Stages I and II. They are intended to provide substantive feedback on the validity of the proposed impact methodology, i.e., on the extent to which it generates meaningful assessment of impact of information and does so using an operational approach that is practical and acceptable. Each individual study, hopefully, will contribute useful experience and insight on the original concepts and methodology.

In addition, there may be larger issues emerging from a more systematic look at the overall body of work now taking place. Furthermore, many of the participants in this research program had never met each other and, at best, had been able to engage only in occasional electronic discussion of methodological and

conceptual issues of mutual interest; the prospect of a more extensive exchange of ideas and practical advice was attractive. For these reasons, it was seen as highly desirable to bring all the principal researchers together for a face-to-face meeting part way through the action-research phase.

Workshop Objectives and Agenda

Objectives were achieved at three levels:

- Individual case studies — providing feedback to improve their design and implementation. During the workshop, leaders of studies were able to describe their particular experiences to date and obtain practical advice from other participants.
- Preliminary impact methodology — reviewing possible revisions to be incorporated into the updated version expected in Stage IV. Issues affecting the draft impact assessment framework (e.g., relative priorities, need for additional guidelines, useful illustrations, practical tools that have been developed in case studies) were identified during the various presentations.
- Overall impact research program — identifying related and longer term impact issues that will influence future program directions. Participants were able to explore program plans, timetables, forthcoming events where the impact program could be presented, associated research of potential interest, communication among participants, publicity, additional international partners, and other ideas to help guide the future development of the research program.

The workshop proceedings were grouped into five sessions:

- Presentation of the six case studies.
- Presentation of the related research studies.
- Presentation of related impact activities.
- General discussion of methodological updates, issues, concerns.
- General discussion of related activities and future plans.

Overview of Papers included in the Workshop Proceedings

The first part of the publication, Case Studies, contains full accounts of each of the six investigations. Authors were requested to provide an introduction to the scope of their particular study, the approach taken, examples of questionnaires or other instruments developed for the study, a status report, and a special note on any specific issues or concerns that required further discussion.

The first case study, by Thorngate, Rojas, and Francini, describes the efforts of CIDE/REDUC to improve the use of information for policymaking in the educational field. It is testing the hypothesis that if policy analysts are trained to acquire the skills needed to be proficient in the search, analysis, and evaluation of educational research findings, they will also be better able to plan and implement more effective educational projects and programs.

The case study is following the experiences of a group of policy analysts in Central America through training workshops and subsequent application of their information skills. Initial findings show the relative absence of a culture of using research information by policymakers in this environment, and the need to find ways of improving communication techniques to influence them. Detailed responses transcribed from interviews help illustrate the progress being made to date.

The case study reported by Haravu and Rajan focuses on the impact of the Semi-Arid Tropical Crops Information Service (SATCRIS) on the communities (primarily research) it is expected to serve. The report follows closely the methodology outlined in the provisional assessment framework, describing the information use environments, development goals, SATCRIS products and services, target audiences, and methods of data collection (including a questionnaire designed for the study). Some preliminary findings are presented.

Hafkin and Menou report on a multicountry study of the impact of information communicated through electronic networking. The focus of the study is on the impact of applying electronic communications in the users' businesses and its contribution to problem-solving or other practical benefits. Extensive preparatory work has been done on appropriate sampling techniques and survey instruments for the in-depth studies taking place in Ethiopia, Senegal, Uganda, and Zambia.

The impact of information to support rural development is the theme of the case study presented by Mchombu. The project involves monitoring the process of setting up and using information service outlets in six rural communities. Information needs have been identified and these are now being interpreted in terms of "anticipated benefits" that can be measured to illustrate impact. The report provides several examples to illustrate the relationship between types of information, corresponding benefits, and relevant information services and products, and describes approaches being taken to collect data on the effects of introducing the community information centres.

The presentation by Chambers and Boissiere describes a concern to improve the flow and transformation of research findings into information products and services that will influence policymaking in the Caribbean. Of particular note in this report are the approach to obtaining the sample of target users and the

detailed description of the methodology for selecting appropriate indicators that will be monitored during the case study.

The final case study, presented by Collins, describes a complex attempt to look at the impact of several regional information systems in the Caribbean. The report identifies some of the practical challenges encountered when applying the provisional assessment framework and the adaptations that have been made to make the methodology viable in the local environment. The need to maintain and improve information services during the impact can place an extra workload on the assessor; but a positive dimension of this is that the valuable feedback being obtained from users and target audiences can be used to reinforce the services.

The second part of the proceedings contains reports from the Impact Research Studies being undertaken in Canada prior to further investigation in China. Pilot projects are taking place at two sites to develop and test a mathematical model that will reveal the relationships between variables indicative of economic conditions, information availability, and information use. The results of the pilot projects will be used in the main study to assess the impact of information on small businesses in Shanghai.

The presentation by Tague-Sutcliffe, Vaughan, and Sylvain describes the pilot study being undertaken in London, Ontario. The report describes the collection of selected data from small businesses and the analysis of it using the LISREL software to determine whether a causal relationship could be demonstrated.

There has been very little experience in using the modelling approach in this field of information science research, and so one of the primary tasks has been to refine the methodology for the current application. The report includes a summary of experience gained in the London pilot study, a tentative plan for the Shanghai study, and several figures and appendices containing detailed outputs of the initial phase of activity.

The companion study reported by Meadow and Spiteri is attempting to answer the question, "To what extent does the availability and use of information affect the success of newly established small businesses in the province of Ontario?" Again, the purpose of the pilot study is to contribute toward developing the methodology for determining variables and collecting the requisite data, leading to full testing in the Shanghai study. The paper includes a discussion of perceptions and assumptions about information in this field, the plan for data collection, and the nature of the variables to be incorporated in the model.

The third part of the publication is a compilation of Related Impact Activities. Most of these papers were presented or tabled in Ottawa. They provide useful perspectives on various aspects of the overall research program. The first paper, for example, offers some reflections by Horton on the current context for

pursuing benefit-cost analysis as part of the impact research program now that the detailed guide to benefit-cost analysis has been published by IDRC (Horton 1994).

In her presentation, Durrant describes the rationale prompting the drafting by IDRC of a research program in Latin America and the Caribbean that would focus on the impact of information (and communication/information technologies) in two areas — policy formulation, and the performance of small and medium enterprises (SMEs). Examples of IDRC-funded projects and consultancies are used to illustrate the types of research and methodological and development issues that could be addressed in this program.

The next two papers were prompted by ideas exchanged by members of the research network via the Listserv. These "think-pieces" have been included here because they provide interesting perspectives on some of the principal questions raised in the research program. The essay by Thorngate is from the vantage point of a social psychologist looking at the process of policy decision-making and the relatively low influence of formal information inputs. He proposes alternatives to expressing the value of information in traditional economic terms, suggesting instead that measures of "attention" and "attitudinal change" might be revealing.

In his essay, Meadow picks up on some of the points raised by Thorngate and offers additional challenges to the assumptions often made about familiar concepts used in evaluating information services. He illustrates, for example, the ambiguity evident in the use of the term "relevance" when applied to information and notes the difficulty in sharing data among information science researchers in the absence of agreed-upon standards.

The use of electronic communication to facilitate discussion of research on information impact is the subject of the next two papers. The first, by Archer, describes the use being made of the special Listserv that was introduced by IDRC in February 1995 to support Stage III of the research program. Of particular interest is the way in which this technology is now reaching all members of the impact research network including those in developing countries. This is a major advance over the situation in 1992, when the scope of the computer conference employed in Stage I of the research program was severely limited because of poor connectivity of potential participants in the South.

Nevertheless, despite this constraint, the computer conference did achieve its objective. Given the relative novelty of using an actively moderated computer conference as the vehicle for exploring an information science research topic in such depth among an international community, readers might be interested in seeing the account by Thorngate and Balson of their evaluation of the Stage I computer conference and their suggestions on how to improve the structure and operation of such a process in the future.

The final paper is an annotated bibliography prepared by Chataway and Cooke. IDRC is attempting to capture the key literature being published in the field of information impact. An extensive bibliography was included in Menou (1993), and the one in the present volume picks up from where that one left off.

Findings to Date, and Looking Ahead

These proceedings constitute a status report on a "work in progress." This was the intended purpose, for it will be perhaps 2 more years before all the results are available from the various studies and a comprehensive analysis of findings can be presented. The original monograph proposing the preliminary impact assessment framework was published in 1993. It seemed timely at this point in the research program to provide an account of experience gained by researchers in setting up their studies.

Understandably, this companion volume places the emphasis not on the theoretical underpinnings of the research program, but on practical operational experience with the impact methodology. This is the domain of sampling techniques, questionnaire design, survey instruments, data definitions, together with some early feedback on the difficulties that may be encountered and the adjustments being made during the testing phase. Hopefully, by bringing together all the progress reports plus related material, this volume will prove to be a source of interesting commentary and practical advice for interpreting and applying the impact assessment methodology.

Methodological Issues and Observations

Contained among these progress reports are examples of survey tools, comparative experiences in using interviews and/or questionnaires, approaches to identifying different user communities, descriptions of anticipated benefits, and a lot of additional information that could prove helpful to others investigating this field. In addition, in the course of individual presentations and subsequent debate, participants flagged a number of points of concern and/or opportunity. The workshop session on "Methodological Issues" was chaired by José-Marie Griffiths. Her concise and illustrated account of the principal items emerging during the discussion, and the priority attached to them, has been included as a valuable appendix to this paper.

To varying degrees, the items identified by participants have potential implications for the current case studies and for those that might follow in the future. It was agreed that finding appropriate mechanisms for addressing the

priority items would require further elaboration and that the INIMCAS Listserv might prove a useful channel for pursuing this in the first instance.

Future Activities

A number of items were tabled concerning future directions for the impact research program and for operation of the impact network. They have been recorded here:

- Communications among the members of the research network should be strengthened by making more effective use of the INIMCAS Listserv. It could be used for problem-solving among the group (i.e., functioning as a "virtual help-desk"), publicizing relevant literature, conference announcements, impact news, exchange of progress reports, etc. INIMCAS users will be canvassed for their opinions — via the Listserv.
- Improvements in the use of the Listserv may require more active moderation of the electronic discussion.
- Although there are pros and cons of keeping the INIMCAS Listserv confined to participants directly involved in the case studies and research projects, it was agreed that the Listserv should remain closed for the time being. This would keep it focused on the task at hand and permit frank discussions to take place within a known community.
- Nevertheless, additional channels must be found for securing input of experience and fresh ideas from outside the current research network. Each member was encouraged to serve as a conduit to his or her own research community and to facilitate two-way flows.
- The experience of other fields (such as medicine, psychology, economics, and management) should be explored systematically for relevant lessons or insights about impact assessment.
- Greater effort should be given by members of the research network to publicize the work taking place in the impact research program and to disseminate information on its progress, using print, electronic channels, and selected meetings.
- Now that the research program has moved to the testing phase, a systematic approach should be considered to selected donors and development agencies, as well as to the broader information community.
- Advantage should be taken of the existence of the guide to BCA for information managers. This manual was published by IDRC as

a spin-off from the previous phase of the impact research program and could be put to good use.

- Although acknowledging the vast amount of additional work that could be undertaken in this field, there was a consensus that the group should focus on its current set of activities, consolidate its findings, and build a strong foundation for subsequent action, rather than end up complicating or diluting the present efforts.
- When planning outreach activities, careful attention should be given to ways of using the material from the research and case studies for best effect. Finding ways of reaching and influencing the right target audience with authority for resource allocation will be a critical task.
- Assuming meaningful results are obtained, one of the principal outputs envisaged is a practical handbook to impact assessment, illustrated with the operational experience gained through the projects.
- To assist in all of the foregoing, IDRC will convene an "International Advisory Group" to advise it (and the research network) on current impact questions, relevant work taking place elsewhere, gaps in the research agenda, issues arising from the case studies, potential institutional linkages, and dissemination activities.

In Conclusion

The complexity of this impact topic is immense, and the feasibility of reaching a practical conclusion is still uncertain. But the prospect of success brings with it new possibilities for reaffirming the impact of information on development, and creating an environment in which information can play a more extensive and productive role in bringing benefits to the developing world. This is a challenge worth accepting. Hopefully, this publication will stimulate others to pick up the gauntlet.

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Appendix

Analysis of Issues and Concerns

José-Marie Griffiths

Brief overviews of key issues and concerns emerging from the presentation of the case studies, related impact activities, and impact research studies were presented by L.J. Haravu and Michel Menou. A free-form discussion ensued and several recurring themes were identified:

1. Definitional issues — the need to define key terms such as information, information resources, impact, etc. There was no consensus on whether a standard set of definitions could, or should, be developed and then adhered to, or whether impact studies should state at the outset the set of definitions used for the specific case.
2. The importance of defining and describing the context of both the information user and provider. The group reiterated the importance of adapting and testing the “information use environment” (IUE) model as described in “Measuring the Impact of Information on Development” (Menou 1993).
3. The need for longitudinal studies to consider transformation and cumulative effects of information provision and use. It is interesting to note that the lack of longitudinal and cumulative studies is a frequent criticism of recent information science research.
4. Sampling issues — a variety of issues associated with sampling were identified. These included whether a sample should be homogeneous or heterogeneous, the representativeness and size of sample particularly in regional studies, scalability of results, individual interviews versus focus groups, etc. As with the definitional issues, there was no clear consensus that standard approaches to sampling should be developed but rather that care should be taken over sample design to optimize the results of a particular case study.
5. Need to address and reconcile differences in opinions and facts, expectations, perceptions, and reality in all aspects of the case studies.

6. Importance of including all stakeholders in the definition and selection of impact indicators to ensure that their points of view are incorporated into case studies.
7. The importance of assessing costs along with benefits, and benefit–cost analysis (BCA) with impact indicators.
8. The need to promote the view of assessment as an ongoing process rather than as a one-time event.
9. The need to test, evaluate and validate indicators so that a set of "proven indicators" can be identified.
10. Need for guidelines on how ordinal values are assigned to scales.
11. Need to address issues of causality and how it can be tracked.

To help frame future discussions and developments, these 11 themes and issues were subjected to an informal prioritization exercise. The informal process did not allow sufficient time for a rigorous definition of the issue areas; thus, any results should be taken as indicative of the priorities rather than an absolute expression of them.

The process used was a forced ranking of each of the issues according to two criteria: the relative importance of each issue to the further development of impact assessments, and the relative ease of implementation of approaches to addressing each issue. Each participant was asked to allocate a total of 100 points across the 11 issues for importance and another 100 points for ease of implementation. The resulting scores for each issue were averaged and displayed in a series of "opportunity maps" (Figs. 1–3).

The opportunity map is a display of importance against ease of implementation. The results can be interpreted by considering the four quadrants of the map. The upper right quadrant contains those issues considered to be the "first target of opportunity," as they are of high importance and high ease of implementation. The upper left quadrant and the lower right quadrant are considered as secondary targets of opportunity, with the upper left being of high importance but more difficult to implement and the lower right being less important but easier to implement. Issues in the lower left quadrant should be carefully considered for implementation since they are of lesser importance and difficult to implement.

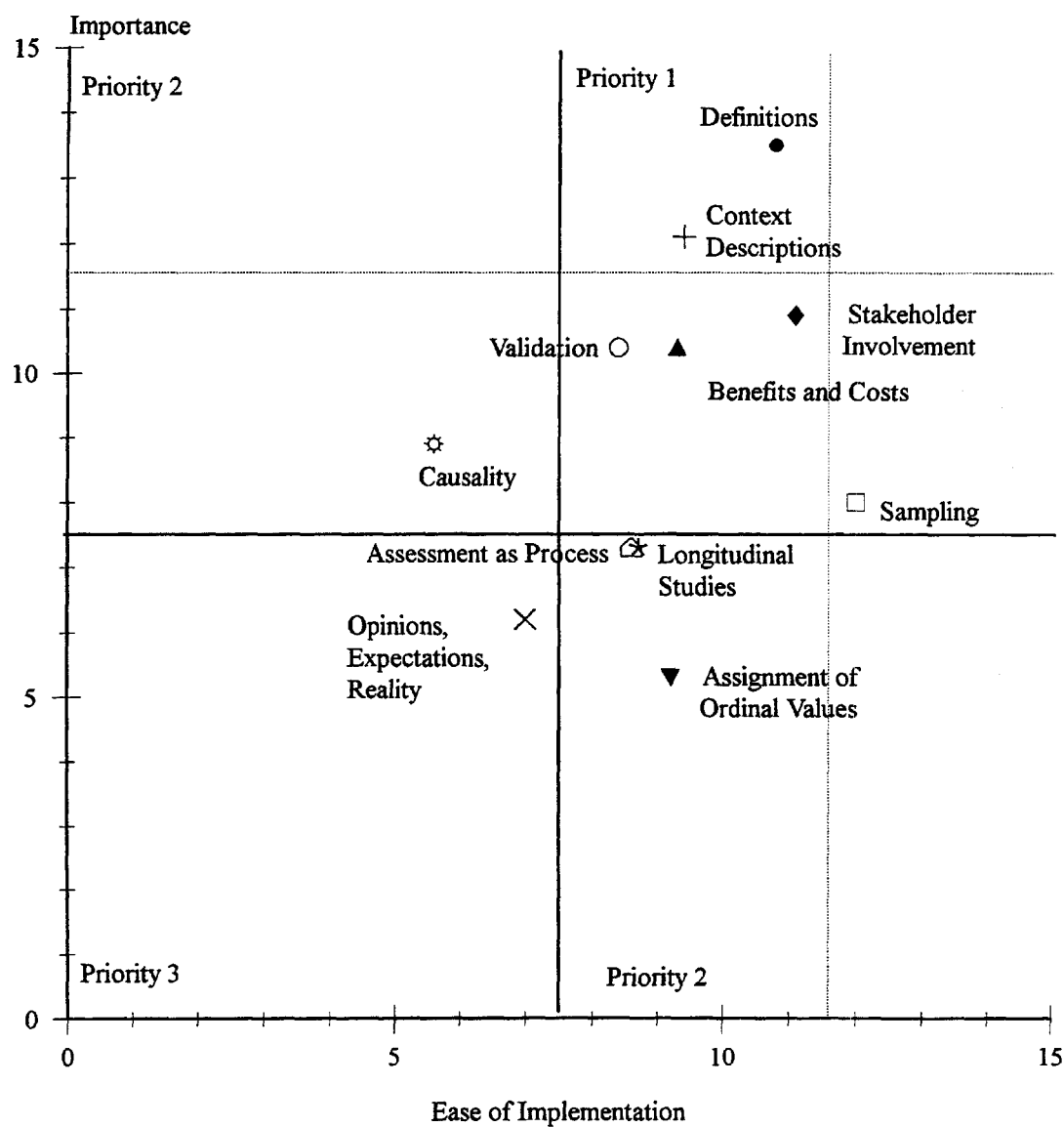


Fig. 1. Opportunity mapping exercise (all respondents).

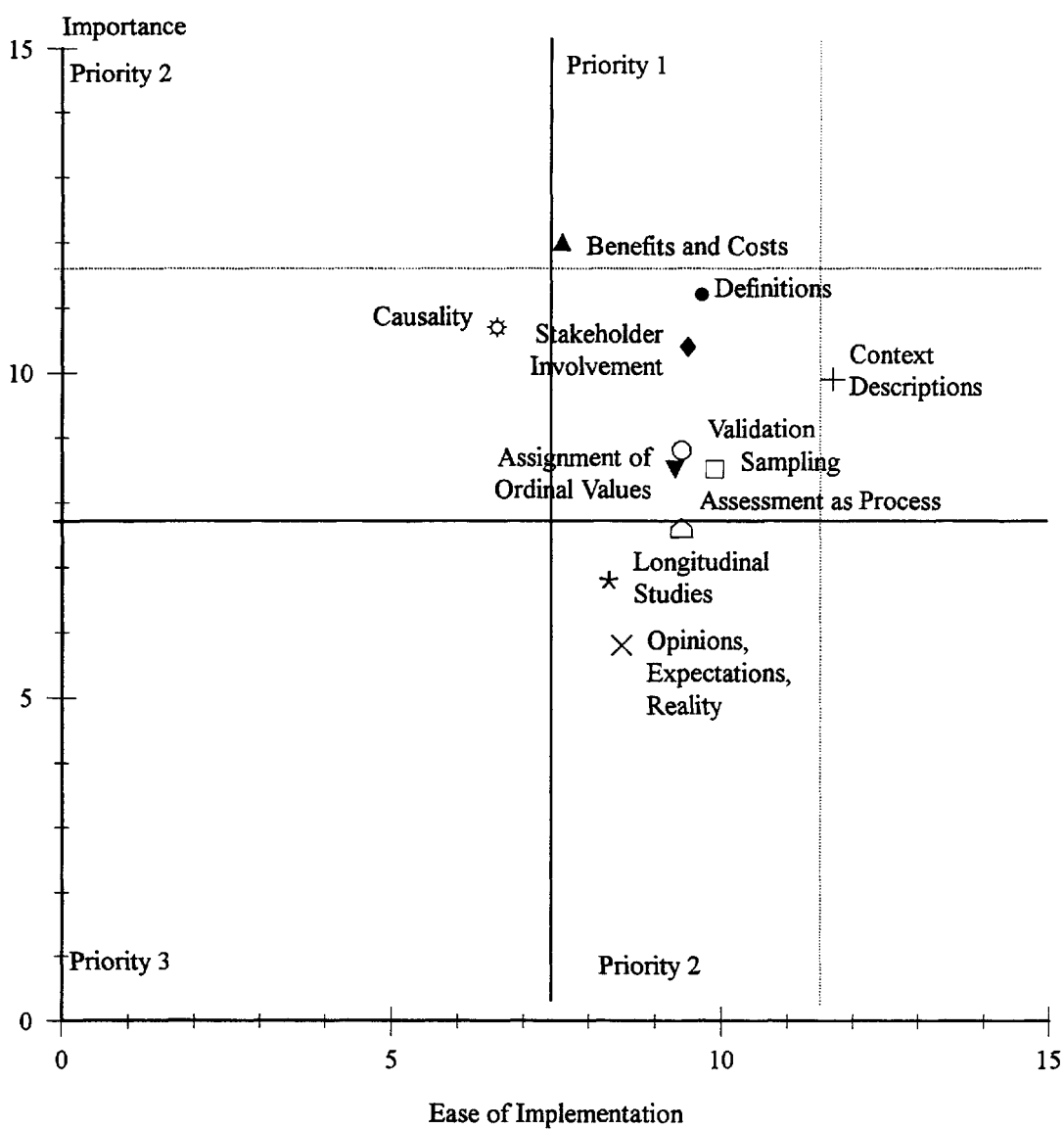


Fig. 2. Opportunity mapping exercise (respondents in the field).

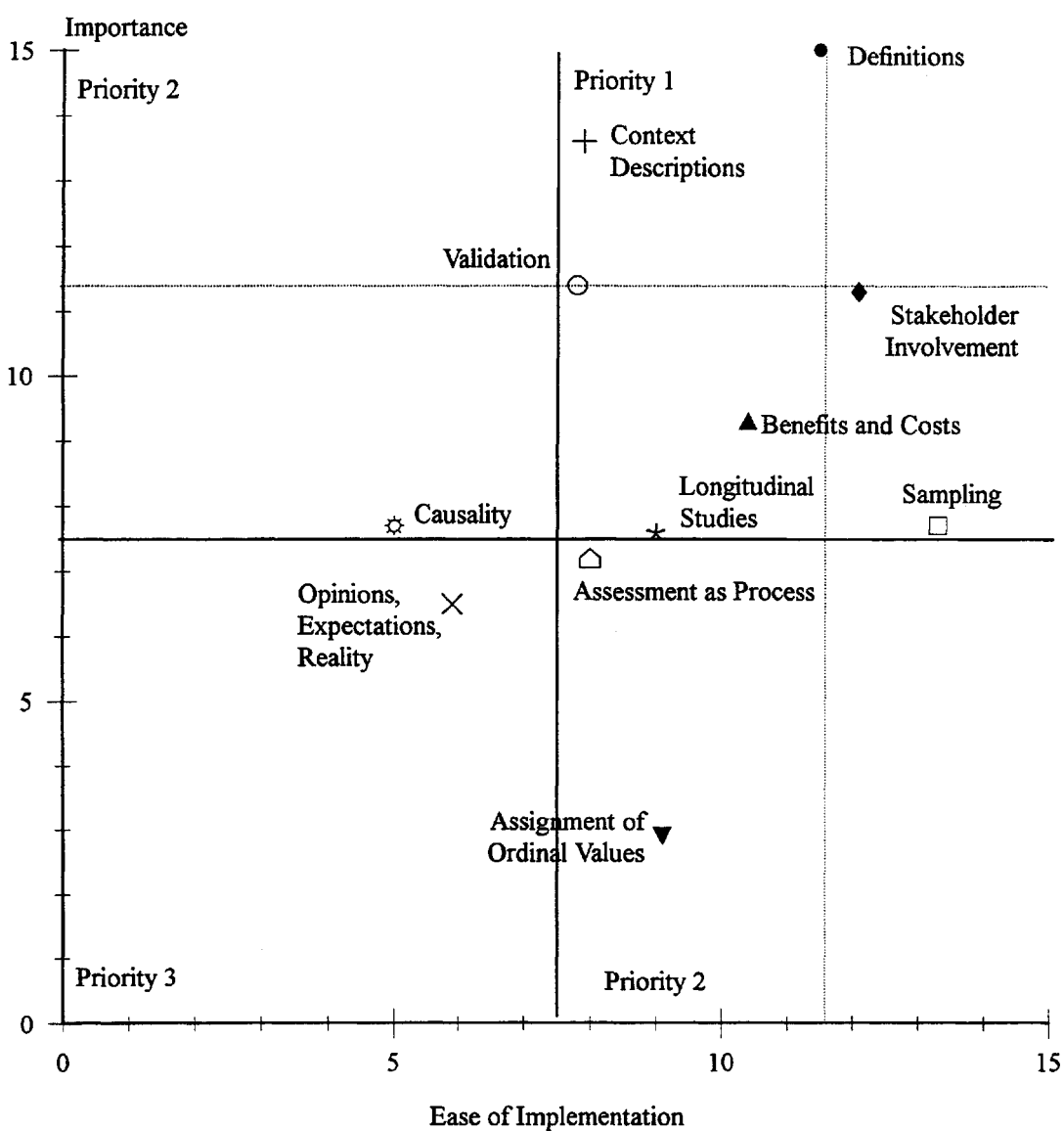
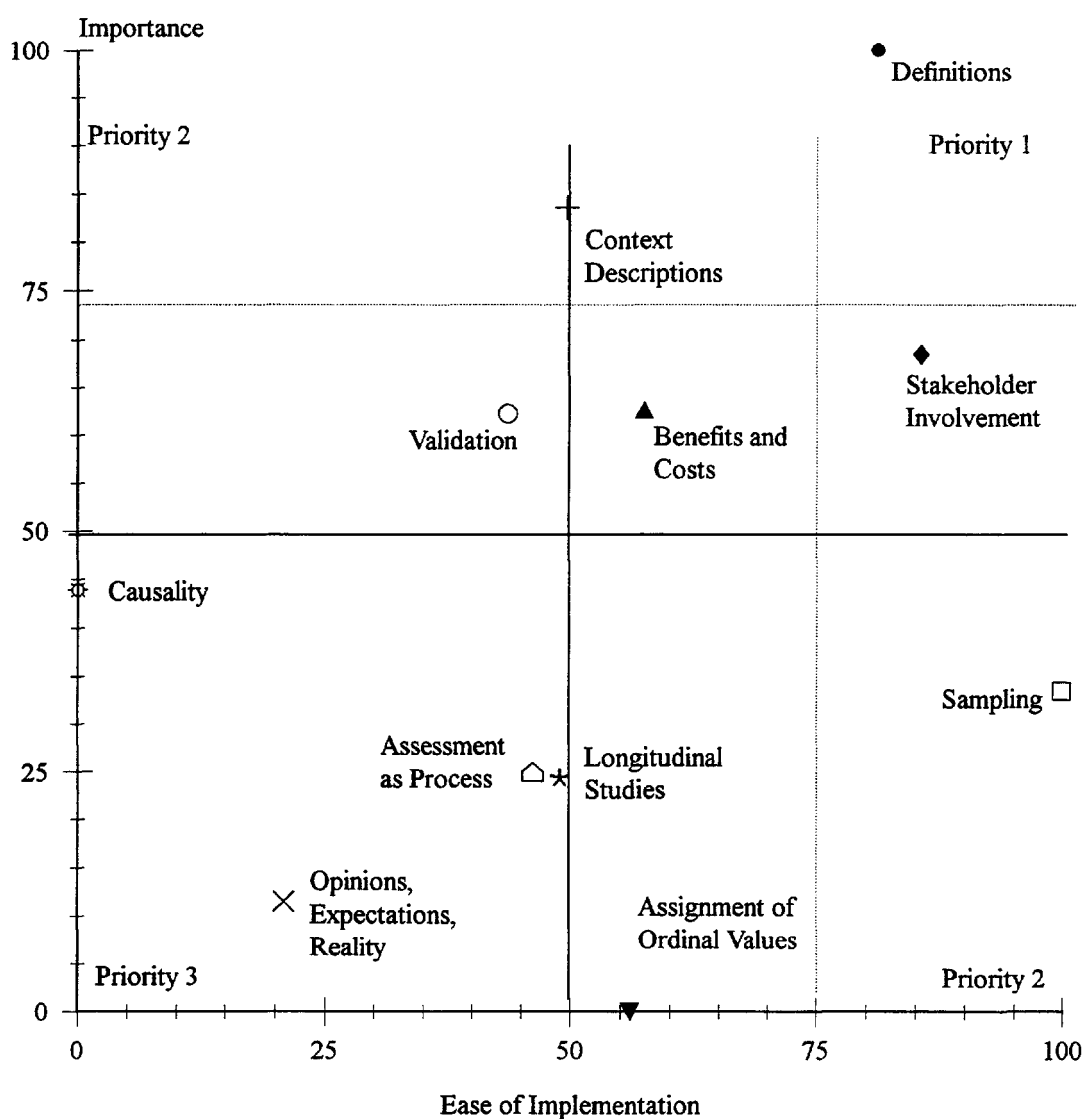


Fig. 3. Opportunity mapping exercise (respondents not in the field).



**Fig. 4. Opportunity mapping exercise (all respondents).
Data normalized.**

Figure 1 shows the opportunity map based on all participants' input. This shows the first target of opportunity to include:

- Definitions
- Context descriptions
- Stakeholder involvement
- Benefits and costs
- Validation
- Sampling

The secondary targets would include:

- Causality
- Longitudinal studies
- Assignment of ordinal values

The third target would include:

- Reconciliation of opinions, expectations, reality

The responses from participants who work "in the field," i.e., in the delivery of information services in developing nations and regions, were separated from the other participants to determine whether any significant differences exist. Figure 2 shows the opportunity map for respondents in the field and Figure 3 shows the map for all other respondents.

Respondents in the field clearly consider the assessment of costs along with benefits to be the most important issue, although they consider implementation more difficult than the nonfield respondents do. Both groups consider the definitional issues relatively important and easy to implement.

Nonfield respondents consider context descriptions more important than field respondents but also more difficult to implement. The field respondents consider the assignment of ordinal values to scales as a target of opportunity, whereas the nonfield respondents do not.

Finally, the responses were normalized to spread them across the visual map. The normalized map for all respondents is shown in Figure 4. In interpreting the normalized map, it is important to remember that an issue that may appear to be of low importance or to be very difficult to implement (e.g., "opinions, expectations, reality" in Figure 4) is only low relative to the others and not according to the scale itself. The advantage of the normalized map is that it unclusters the issues so that it is clearer to consider a sequence of consideration.

For example, based on Figure 4, the order of considerations implied is:

- Definitions
- Context descriptions
- Stakeholder involvement
- Benefits and costs
- Validation
- Sampling, etc.

AUGUST 1995

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MEASURING *the* IMPACT of INFORMATION *on* DEVELOPMENT

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EDITED BY
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INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

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