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The role of research in a technical assistance agency: the case of the 'German Agency for Technical Co-operation'

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Abstract

Technical assistance agencies have a sustainable impact on the health systems of the countries they are operating in. As well as policy-makers at the national level, technical assistance agencies see themselves confronted that their interventions should be based on evidence, usually meaning the results of research. This study has the aim to analyse role of research in the implementation of technical assistance.

We sent a questionnaire to all health project managers of the 'German Agency for Technical Co-operation' and performed a qualitative case study in one of the health projects. Forty-seven of 80 (58.8%) of the questionnaires were completed and sent back. The managers considered publications of International Organisations (IOs), scientific articles and local research as most important for their work. The case study showed application problems in the daily work. Research use not only depends on the relevance of the data but also on analytical skills, linguistic barriers and technical access to research by the potential users.

The role of knowledge and information management has to be clearly defined in an organisation of technical assistance. The specific needs at the different levels have to be analysed so that skills and resources can be allocated adequately.

Keywords: Technical assistance; Research use; Research broker; Research access

1. Introduction

During the past decade, reforming the health sector was put on the agenda of most countries. The reform process is accompanied by the debate as to how far reforms are guided by research-based evidence [1–3]. Evidence based reforms are supposed "... to ensure that scarce resources achieve maximum health gain" [4]—especially in countries from the South where resources are limited [5].

This discussion has been influenced by clinical medicine, where it has become increasingly com-

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mon to evaluate the appropriateness of procedures by looking at the evidence used to guide decisions. Evidence based medicine, according to Sackett et al., is the "... use of current best evidence in making decisions about the care of individual patients. The practice of evidence based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research" [6]. Although dealing with health systems differs in many aspects from dealing with an individual patient, the basic principle might not be so far apart: avoiding decisions based on mere individual or institutional experience by looking actively for current "best practice" and integrating general standards with the requirements of a specific situation and the experience of the decision-makers.

Therefore, many researchers demand that the results of their "Health Systems Research" (HSR) should be put into practice. For Nuyens, HSR is: "... action oriented (...) and provides decision-makers, managers and community members with information to make more rational decisions about health and health care" [2]. But most of the authors found that research results were under-utilised [7–11]. Sauerborn et al. summarised the reasons why research was under-utilised as follows:

- researchers' lack of knowledge of the policy-making process;
- lack of ownership of the research agenda by key stakeholders;
- inappropriateness of data for use by the stakeholders;
- bad communication of results to stakeholders;
- inappropriate institutional framework linking researchers and stakeholders; and
- researchers' too narrow view of their own role [11].

In the rare cases, in which research directly influenced decisions, the following reasons were cited as enhancing research use. Haaga and Maru [12] and Philpott et al. [13] found that:

- policy-makers supported the research since they needed results for pressing health policy questions;
- research use was facilitated by a favourable institutional setting, i.e. researchers and policy-makers were linked through intermediary structures and personal relations;
- the data generated by the research was clear, simple, applicable, i.e. relevant; and
- research in fact improved part of the decision-making/implementation.

While most of the studies concentrate on policy-makers, we believe that research use by the staff of a technical assistance agency is an important issue as well. Many interventions focussing on health systems in countries from the South are influenced by technical assistance agencies with varied expertise. In some cases, the interventions are not successful because of a lack of co-ordination between the different agencies [14], because of political conditionality [15] or of a lack of research-based evidence as a basis for their work [16]. This paper focuses on the last issue.

We wanted to assess the role of research in the implementation of technical assistance. We chose the "German Agency for Technical Co-operation" (GTZ)[1] for our study. We examined the role of research in 80 health projects the GTZ supported in 2000/2001. We selected one project situated in Cambodia for an in-depth analysis. GTZ is of interest, because with nearly 30 years of experience of co-operation with developing countries in numerous projects, it has the potential to contribute substantially to international knowledge on health sector reform issues.

As a conceptual framework we used a model of research flow, developed by Gerhardus et al.—see Fig. 1. It distinguishes between three main groups which are involved in research flow: the research producers, research users and "research brokers" [17]. These categories are not mutually exclusive; one institution might do research, transmit the findings and also use the research. In addition, the institution might not exclusively process research, but also other kind(s) of information.

We consider *research* to be a subgroup of *information* [11] and define it similarly to the concept of Gerhardus et al. [17]: as a systematic, transparent and comprehensible activity that starts with theoretical questions and/or hypothesis and aims to create new *knowledge*. In the case of HSR, it is ultimately meant to improve the health status of individuals and/or populations.

[1] The German name is "Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) mbH".

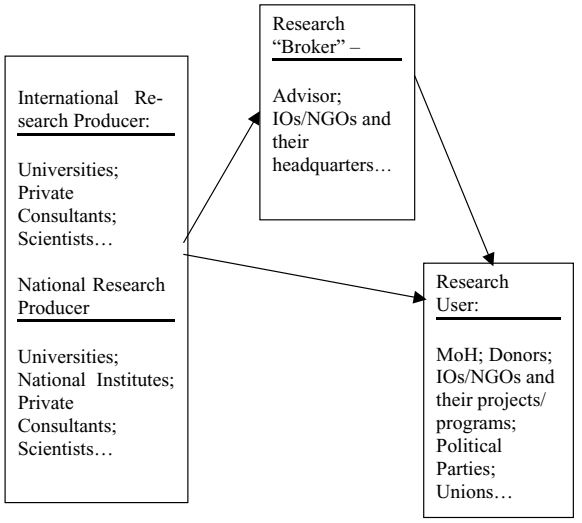

Fig. 1. Conceptual framework (adapted from Gerhardus et al.). The arrows indicate the flow of research. International research producers are those who do research outside the boundary of the respective country, whereas the national research producer does research inside the country. The "research broker" (being inside or outside the country) collects information from national and international research, usually transforms it to make it easier understandable or more operational and transmits it to the research user. The user applies the research in the country.

Research can be 'produced' by various authors such as universities, national institutes or consultants. International Organisations (IOs) or Non-Governmental Organisations (NGOs) are, in our view, best situated to act as research broker. Many of them have central bodies that can collect and transform research to be transmitted to their offices/projects/programs in their partner-countries. Research results can be documented in various sources[2] such as technical journals, databases or guidelines. While sources like technical journals or single publications mainly contain primary research, guidelines or manuals mainly contain secondary research.[3] There are multiple *uses* for research.[4] Research results can be consulted to clarify misunderstandings or technical problems; they can be included as argumentation or explanation in a lecture, a briefing or a meeting. Research results can provide an element of validity to a statement or argument. Finally, they can provide the basis for decision-making.

Our study was based on the following assumptions: we considered GTZ-headquarters/Germany to have a leading role as a 'research broker', making research available to the GTZ-projects. We saw the GTZ-supported health projects and their managers as a potential research-user. The local GTZ staff would also be a research user in the first line. Since GTZ is an organisation supporting projects/programs, it has a limited mandate as a research producer. Under specific circumstances, GTZ commissions studies to universities and consultants, which are then issued under the GTZ-label. On the local level, GTZ staff-members might do operational/applied research related to project-questions. GTZ also might support projects with a research component or commission operational/applied research. Given this limited mandate, we focused on GTZ's role as a research user and a broker.

2. Background

2.1. GTZ-headquarters and the co-operation with the health projects it is supporting

Founded in 1975, GTZ is owned by the German Government. Its main task is to implement German technical assistance in developing countries. It is not allowed to make profit and mainly depends on

[2] Since there are many forms to document research results (and not all of them are necessarily published forms) we use the term "source" in this paper to mark all publications/documents/formats that might include research results.

[3] Primary research means that the research producer who has conducted the research also 'documents' the results. Secondary research means that primary research has been reviewed and interpreted. Tertiary research means that a 'broker' has collected, filtered and transformed a variety of research results (and other relevant information) in order to design a guideline/manual on a specific topic.

[4] Considering decision-making in policy-making processes, Black emphasizes that these processes are not single events, which will be influenced by single studies [37]. He refers to the 'Enlightenment Model' of Weiss [36] and states: "... research provides a new way of conceptualizing the world, mapping the decision making terrain, and challenging conventional assumptions. Research is seen as one of several knowledge sources (...). Research is considered less as problem solving than as a process of argument or debate to create concern and set the agenda" [30]. We think that the same applies to decision-making in the implementation of technical assistance and therefore do not limit 'research-use' to 'research-use for decision-making'.

financial resources, transferred by the German government through the "Federal Ministry for Economic Co-operation and Development" (BMZ). GTZ has its headquarters in Germany and maintains offices in nearly 70 countries. It supports projects in about 120 countries world-wide.

For our study, we looked at the tasks of the headquarters' Planning and Development Department (PDD): PDD is responsible for the provision of sectoral expertise and advice for projects, project evaluation and policy formulation and planning [18,19].

Since we see research as a subgroup of information, one of the current objectives of PDD is of interest for us: its aim to establish "Knowledge and Information Management" to increase the availability of present knowledge to the project staff [20]. An investigation by S.H. has revealed that staff at the 'health unit' of PDD is in fact potentially acting like a manager (or broker) of knowledge and information, including research. The staff sees itself as belonging to a "world of experts", using international guidelines (published through IOs) as well as scientific research (published in international journals) for decision-making [21].

However, the processes of the transmission of knowledge and information (including research) from PDD to the projects and vice-versa are not yet standardised. In addition, we found no standardised procedures for the use of research for decisions in project planning and implementation [22–28]. As the 'health unit' only consisted of eight staff-members at the time of the study, time-constraints and workload were cited as being the main problems in continuously working on tools for the knowledge and information management [21].

During this study, GTZ supported 125 health projects world-wide. Their topics ranged from the training of health personnel to the prevention of HIV/AIDS and to family health.

One project was chosen as a case study, which will be described below.

2.2. The Cambodian project "Support to Health Sector Reform"

The Cambodian project was initiated after the time of the UNTAC-administration (the "United Nations Transitional Authority in Cambodia"). During the Khmer Rouge regime (1975–1979), the major part of the infrastructure, including the Health Sector, was destroyed and many intellectuals were killed. From around 463 doctors before 1975, only 43 remained in 1979 [29]. Due to the ongoing civil war, the country's infrastructure could only be properly rebuilt after the peace treaty in 1991 and the elections in 1993. The Cambodian Health System is restructured with the assistance of a variety of donors with the "World Health Organisation" (WHO) taking a lead. The first sector reform was based on the 'District Health System' concept [30]. In 1993/1994, the Ministry of Health (MoH) was looking for partner agencies to assist in capacity building, institutional strengthening and the training of health personnel and asked the German Government. The GTZ supported project itself started in 1995.

The project has the aim to strengthen the Cambodian health services, to increase community participation, to enhance the performance of the health personnel (in pilot health centres), to improve national health policies to guide the staff and to enhance access to the health services [31]. Towards improving the health personnel's' management performance and for the assistance in developing national health policies, a "National Institute of Public Health" (NIPH) was established, starting in 1995. Its main purpose is to train key health personnel (provincial/district managers), to undertake research and to assist the MoH in policy formulation and implementation. The NIPH includes a library, where project-relevant publications are available and where the staff has access to the Internet. Furthermore, GTZ is engaged in two provinces (Kampot and Kampong Thom), where it assists the MoH in capacity building in the health sector, and in strategy development through pilot testing of innovative approaches [32,33].

2.3. Study questions

We developed the following study questions against this background: Which sources do the GTZ project managers consult in the implementation of technical assistance? Which sources are considered as important? Which sources does the local GTZ staff consult? Which sources does the staff consider as important and why? Does the project staff use research results? What kind of research is used? How is research accessed? What is the role of PDD in Germany as a

Table 1
Categories of potential GTZ-sources of information for the GTZ-staff

GTZ-source	Issued by	Primary research	Secondary research	Tertiary research	Mix	Other information
Publications of sectoral projects[a]	Headquarters (PDD)				×	
Technical toolkits covering specific topics[b]	PDD		×	×		
'Owner-Health' (GTZ-newsletter)[c]	PDD		×	×		×
GTZ-Intranet	Headquarters (PDD)				×	×
The Shared-Database	PDD	×				
Other GTZ-databases	Headquarters/projects				×	×

[a] Sectoral projects are projects on a specific topic like 'health insurance', they are not country-related.
[b] Toolkit means a collection of technical information and study-references (e.g. in folders) for the GTZ staff.
[c] The Owner-Health is an Internet newsletter including GTZ-news and studies.

provider of research-based evidence: is it acting as a 'research broker'? Are its own sources used? To facilitate the understanding of what might be GTZ-sources containing research results, we categorised them in Table 1. Initially, we investigated research as well as non-research sources. Due to reasons of space, we focus on research sources in this paper. We compare the use of non-GTZ-sources to the use of GTZ-sources.

3. Methods

We carried out the following types of data collection: a quantitative mail survey among the GTZ-project managers, semi-quantitative and qualitative/in-depth interviews among the local staff in Cambodia.

3.1. The survey among the GTZ-project managers

The aim of a survey through distributing closed questionnaires was to get a ranking of the sources the GTZ-managers consult and consider as important for their advisory tasks. Therefore, a questionnaire was developed together with one GTZ staff member at PDD and it was pre-tested with two former GTZ staff members.

The questionnaire was then distributed by an internal mailing system at GTZ headquarters in the first round. Since we wanted to assess the 'flow' from PDD to the projects, the included projects had to be health projects not administered by headquarters. As the response-rate was not satisfactory, we sent it directly to the email addresses of the GTZ project managers in a second round. A follow-up was done by telephone and fax. At the time of the study, GTZ supported 125 health projects, 16 of them located at GTZ-headquarters/Germany. Nine projects were still in their planning phase and did not have a manager yet. Thirteen project managers were advising two projects, one manager advised three. For five projects, only the topics but no addresses/fax numbers were indicated in the project list we had received from headquarters. In summary, 80 projects have received the questionnaire.

The topics comprised: (1) the general factors that could influence the advisory tasks of the managers, (2) the sources the managers consult and judge as important and (3) the importance of the sources issued by GTZ itself. To compare the importance of sources issued by PDD with sources not issued by PDD, we included the category "GTZ-sources" into question two. Question three then explored the ranking within the GTZ-sources. Finally, we asked for professional data.

The scale regarding the closed questions ranged from 5 for 'very important' to 1 for 'not important'. If a question could not be answered, a 'zero' had to be given. Adding the points per answer and dividing them through the number of answers gave the mean [34]. 'Zero'-answers (i.e. 'not applicable') were not included and indicated separately. We calculated 95%-confidence intervals to analyse in how far the differences between means are significant at a 5% level.

3.2. The semi-quantitative and qualitative interviews with the staff of the Cambodian project

Semi-structured interviews were conducted in the Cambodian project in order to include local staff members in the assessment, to assess the meaning

of the different sources and to ask *why* the respective sources were considered as important [35]. An interview-guideline was developed and pre-tested with two former and two current GTZ-staff members.

Between January to March 2001, S.H. interviewed 13 GTZ and NIPH staff members working within the Cambodian project. The criterion to be included was that the interviewee should be involved in the implementation phase of the project, that (s)he should have a certain educational level, know English and that (s)he should have a task that would potentially need the consultation of research. The interviewees included nine local/Cambodian experts and four non-Cambodian experts: the GTZ project manager, another long-term seconded expert (long-term experts work in a project for more than twelve months) and two co-ordinators for the provinces. The two long-term experts were contracted by GTZ-headquarters; the other experts were contracted by GTZ-Cambodia and by the MoH/NIPH. The interviews had a duration of one hour and were undertaken at the work place of the interviewees. No staff member refused to be interviewed.

In the semi-structured interviews, we explored the professional background of the interviewees and which sources they consulted and considered as important for their work. We wanted to know why they were considered as important and what access the interviewees had to research. To compare the importance of sources issued by PDD with sources not issued by PDD, we here also included the category "GTZ-sources" into the question. Furthermore, we explored whether the single GTZ-sources (existing in English) were considered as important and whether PDD facilitated the access to the GTZ-sources.

Questions two and five were closed questions and the staff was again asked to assign points from 5 (very important) to 1 (unimportant) for the sources they consulted. If a question could not be answered, a 'zero' had to be given. Adding the points per answer and dividing them through the number of answers gave the mean [34]. 'Zero'-answers (i.e. 'not applicable') were again not included and indicated separately. Seven interviews were recorded, six staff-members felt uncomfortable with this procedure. In these cases, notes were taken. The interviews were analysed according to the topics included in the questions. After an initial analysis, the results were presented to three Cambodian and three external experts in order to get feedback.

Following this general analysis, we conducted qualitative in-depth interviews with two key informants. We wanted to find out what kind of research was used and how. The key informants were selected out of the 13 interviewees. One should be a Cambodian, the other one an external expert. The external expert was a short-term consultant working on the development of a concept for a new project component. The local expert worked on the implementation of a project component. The interview covered four topics: the sources used by the interviewees for conceptualising/implementing the respective project component, what kind of research results were included, how they were used and what was the opinion on GTZ-sources.

4. Results

4.1. The survey among GTZ health project managers

Forty-seven out of 80 managers responded to the closed questionnaire. The response rate was 58.8%. To find out the representativity of the projects included in the study, their characteristics (region and topic) were compared with those projects not included because of non-response from the managers. Table 2 shows the results of the regional and topical comparison.

4.1.1. Characteristics of the project managers and the sources considered as important

The project managers who responded had the following professional characteristics: 36 respondents were medical doctors, 10 had other professions (e.g. an engineer), one of the respondents did not fill in his profession.

Table 3 summarises the results regarding the perceived importance of the sources the project managers consult for the advisory tasks. In the first rank, we find publications of IOs. Articles in scientific journals are in the second place of the ranking. In third place, we find documents on local/operational GTZ research. Internet-databases are in fourth rank. However, confidence intervals of these sources overlap, which means that differences are not statistically significant.

General GTZ sources issued by headquarters/PDD were considered as less important than sources of other (internationally acting) organisations (the difference

Table 2
Representativity of the projects included

	Answers: 47	Not answered: 33
Region: 80		
Africa 41 (51%)[a]	25 (61%)[b]	16 (39%)
Asia 17 (21%)	10 (59%)	7 (41%)
Middle East/North Africa 3 (4%)	1 (33%)	2 (66%)
Latin America 19 (24%)	11 (58%)	8 (42%)
Topic: 80		
Reproductive/family health 28 (35%)[c]	19 (68%)[d]	9 (32%)
HIV/AIDS/STD control 8 (10%)	4 (50%)	4 (50%)
Health technology, e.g. maintenance, orthopaedics 12 (15%)	5 (42%)	7 (58%)
Infrastructure/human resources 32 (40%)	19 (59%)	13 (41%)

[a] Percentage of total "region".
[b] Percentage of total "Africa", etc.
[c] Percentage of total "topic".
[d] Percentage of total "reproductive/family health", etc.

is significant). GTZ-sources are in fifth place of the ranking.

Table 4 summarises the GTZ-sources—a sub-set of all sources of Table 3, giving an idea of the 'flow' from PDD to the projects—and the importance of these sources attributed by the project managers. The sources are ranked as follows: the publications of sectoral projects are the most important sources, the difference to the other sources is significant. Technical toolkits, the newsletter "Owner-Health", GTZ-Intranet, and The Shared-Database are following, the differences between each other are not significant.

4.2. The role attributed to research by the interviewees of the Cambodian project

4.2.1. Characterization of the staff, importance and use of sources not issued by PDD/GTZ-headquarters

Except for one local expert, all staff members interviewed were medical doctors. Their working experience in the health sector ranged from a few months to several years. Table 5 shows a ranking of the sources that the staff consulted and considered as important.

The most important sources were guidelines, best practice standards and manuals of IOs and NGOs; all staff members consulted them. The titles frequently

Table 3
Average points for each source as assigned by the project managers and ranking of the sources

Source	Number of answers (n)	Number of respondents stating 'not applicable'	Points (p)	Mean (95%-confidence interval) (ai)[a]
Publications of Ios/NGOs (studies, manuals, etc.)	47	0	187	3.98 (3.77 – 4.19)
Scientific articles in technical journals, studies (BMJ, etc.)	47	0	174	3.70 (3.50 – 3.91)
Documents concerning operational/ applied GTZ-research of the respective project	45	2	167	3.71 (3.38 – 4.04)
Internet-research (in databases like MedLine, etc.)	47	0	167	3.55 (3.25 – 3.86
GTZ-sources (see Table 4)	46	1	149	3.17 (2.89 – 3.45)
BMZ-sectoral or country papers	47	0	140	2.98 (2.70 – 3.26)
Research by private consultants	44	3	130	2.95 (2.76 – 3.24)

[a] $\text{ai} = p/n$; total $n = 47$, total $p = 235$, importance = 1–5.

Table 4
Average points for the GTZ sources and ranking of the sources

GTZ-source	Answers (n)	Number of respondents stating 'not applicable'	Points (p)	Mean (95%-confidence interval) (ai)[a]
Publications of the sectoral projects	45	2	159	3.53 (3.28 – 3.79)
Technical toolkits covering specific topics	40	7	117	2.93 (2.59 – 3.26)
'Owner-Health' (GTZ-newsletter)	37	10	108	2.92 (2.57 – 2.84)
GTZ-Intranet	45	2	122	2.71 (2.38 – 3.04)
The Shared-Database	45	2	114	2.53 (2.23 – 2.84)
Other GTZ-databases	41	6	90	2.20 (1.90 – 2.49)

[a] ai $= p/n$; total $n = 47$, total $p = 235$, importance = 1–5.

cited were the "District Health Management" of the WHO, the "Health Centre Manual" (MoH-Cambodia/WHO) or "The Health Care demand survey in Cambodia" (MoH-NIPH/WHO/GTZ). Regarding the use of the sources, the key-informant working on the implementation of a project-component stated that he had not used national and international publications of IOs/NGOs to get informed on research results, but to get practical guidelines and to explain technical issues to the local health staff. The second key-informant stated that he had used publications of IOs/NGOs to get informed about the 'philosophical background' of the concept he was working on.

Regarding Cambodia-specific studies, the interviewees stated that Asian scientists from the SEAMEO-TROPMED network and research institutions like the Mahidol University, Thailand, sometimes backstopped the staff of the NIPH. Other Cambodia-specific studies were done by IOs and NGOs. Research conducted through the NIPH for the MoH and supported by GTZ was meant to be applied research (publications of experiences in the two Provinces), or behaviour surveys. Our key informant working on the conceptual part of the project used research done by GTZ and the NIPH. He used it for concrete decisions, e.g. on what had to be improved in the management of the pilot Health Centres GTZ was supporting. The research was commented to be applied research, i.e. the application of research results the NIPH and GTZ staff had previously collected from the Health Centres. The key informant on the implementation part stated that he had not yet used applied research because no project-related research on his specific topic had yet been done.

Table 5
Average points for each source as assigned by the staff and ranking of the sources

Source	Number of answers (n)	Number of respondents stating 'not applicable'	Points (p)	Mean (95%-confidence interval) (ai)[a]
Publications of IO (guidelines, manuals, ...)	13	–	60	4.62 (4.34 – 4.89)
Cambodia-specific (scientific) studies	9	4	37	4.11 (3.22 – 5.00)
Documents concerning operational/applied NIPH/GTZ-research of the project	11	2	44.5	4.05 (3.45 – 4.64)
Scientific articles in technical journals, studies (BMJ, etc.)	10	3	36	3.60 (2.87 – 4.33)
Internet-research (in databases like MedLine, etc.)	9	4	31.5	3.50 (2.55 – 4.45)
GTZ information sources	10	3	33	3.30 (2.73 – 3.87)
Studies of private Consultants	10	3	31.5	3.15 (2.35 – 3.95)
Other: 'HPN-news + notes' (stated by the long-term experts)	2	11	9	4.50 (not applicable)
Other: MoH-guidelines	9	4	36.5	4.05 (3.12 – 4.71)

[a] $ai = p/n$; total $n = 13$, total $p = 65$, importance = 1–5.

Scientific articles were considered to be important in theory, but the staff could not fully judge their importance. Only some local staff members consulted articles on a regular basis. The number of articles consulted lay between one per month (stated by one local staff member) to several articles a week (stated by one long-term expert). The most important articles mentioned were on Quality Management and on experience (e.g. with HIV/AIDS prevention) in other countries. Our key informants used scientific articles to be informed about recent international developments in specific topics, e.g. in Quality Management. The articles were not used for decisions, but to shape the 'view of the world'. The interviewees could not recall concrete titles of scientific articles.

4.2.2. Importance and use of GTZ-sources

The interviewees considered publications of GTZ-sectoral projects as most important, though the staff was not familiar with many of them. The two long-term experts listed more GTZ-publications. Technical toolkits compiled by PDD were unknown to the two long-term experts and the local staff. The long-term experts stated that for them, the most important GTZ-source of PDD is the 'Owner-Health', the internal Internet Publication forum of the GTZ health-unit, distributing GTZ-related health-news and studies. It can only be accessed by a GTZ-password, the local staff has no independent access to it.

Our key informant working on implementation used GTZ-sources. The sources were issued by PDD. The key informant accessed them through personal contacts to a counterpart at PDD. He used the publications like those of IOs/NGOs: as an explanation and to brief the staff on specific technical issues. The other key informant, working on conceptual aspects stated that he had consulted specific GTZ-guidelines as a background on specific questions.

4.2.3. Reasons for use and non-use of the sources not issued by PDD/headquarters

For the staff, publications of IO/NGOs and local (GTZ-) research were important because they were very practice-related. Scientific articles were judged to be too "abstract". Other factors identified as influencing the reading of articles were difficulties to understand the English and the limited Internet-skills to access the relevant databases. Seven staff members stated that their access and capacities to find and read scientific articles were still limited.

Since local research capacities in Cambodia were still in their development phase, the most important form of research access for all the interviewees were meetings and conferences in Cambodia. Information-exchange within the project and between the different donors and the MoH in Cambodia was judged to be very helpful. Equally important for the GTZ-staff was research in the library (despite the limited capacities) and regular updates on developments in the Cambodian Health Sector. Internet-research was considered to be very important by those staff-members who had user-experience and good access (four of them, including the two long-term experts). However, most of the local staff stated that it was too expensive, time-consuming and that they lacked sufficient skills to use it regularly, as Internet access in Cambodia is recent. In the provinces, it is only rarely available. Four staff members did not use the Internet at all; five of them did not use it regularly. One of the local staff summarised this as follows:

> Well, I can say that many of us are not so keen in looking at or searching for information in general, including research results (. . .). Sometimes we lack information and we don't know how to find it, the research skills are not yet there. A very important source is the search in the library, sometimes we surf in the Internet to look for some fresh literature. But Internet is too much recent and expensive, we cannot yet apply it in Cambodia, so some staff are hesitant (Interview 5; 22.01.2001).

4.2.4. Reasons for the use and non-use of GTZ-sources

Access to GTZ-sources was difficult and expensive for the staff not employed by headquarters itself. Especially publications of sectoral projects had either to be ordered by a specific library or to be distributed by the project manager as stated by one local expert:

> The GTZ-information is given to us most of the time through our GTZ-secretary, sometimes through the senior advisor (the project manager, S.H.) or through her assistant (. . .). So far, the general information-sources we got from GTZ is more, I mean, technical information for example on monitoring. (. . .) Publications of Sectoral Projects,

well, I only know one on social insurance. I only use very little GTZ-information-sources, I am not fully aware of them (Interview 10; 10.02.2001)

Six local staff members stated that they had no direct contacts to PDD. Those staff members (including the two long-term experts and one of the key informants, see below) who were in contact with PDD used and assigned more points to GTZ-publications (3–5) than those who did not have contacts to PDD, who gave less points (2–3).

5. Discussion

Before discussing the results, we have to look at the limitations of the study: in our mail-survey only 47 out of 80 project managers have answered. We therefore analysed the representativity of the group that responded (Table 2). We found a relatively high response rate of "reproductive health" projects, a topic for which abundant research exists. It is probable that these projects have a bigger interest in the topic of "research use". The opinions of project managers advising pure technical projects or having less interest in the topic of "research use" might be underrepresented in the survey. Another limitation is the fact that GTZ staff members (G.S.E. and B.S.E.) were involved in the design of the study. We dealt with this potential source of bias by the fact that a non-GTZ-staff (S.H.) conducted the interviews and had the main responsibility for analysing and interpreting the results. Since this is—according to our knowledge—the first investigation of this kind, it is not clear how far the outcomes of the questionnaire are representative for similar organisations. We do not claim that the results of the Cambodian case are generalisable even for other projects within the organisation. The purpose of a case study is rather to illustrate the quantitative results from the questionnaire and to provide the basis for further studies.

By looking at the results of the mail-survey among the project-managers, two points are of special interest: first, the fact that scientific articles were valued relatively high in the ranking. This result is interesting because as we saw, scientific research is often too abstract to be relevant for practical issues. Second, the fact that—contrary to our assumptions—GTZ-sources issued by PDD (grouped together under "GTZ-sources" in Table 3) can be found on low places of the ranking. This result is interesting because various GTZ-publications on different topics and in different languages exist.

The high rank of *scientific articles* leads to the interpretation that, other than policy makers, GTZ project managers might in fact follow the international scientific discussion as well as the development of international best practice standards.

The fact that *sources of PDD and headquarters* were considered as less important than publications of other (internationally acting) organisations might have the following reasons: the project managers might not know about the relevant existing sources; there might be communication problems or missing links to PDD in Germany; the quality of the sources may be considered to be weak or the knowledge and information management by PDD needs improved communication channels and standardised approaches.

Our case study on the Cambodian project gave us some explanations: The interviewees consulted primary, secondary and tertiary research, but judged tertiary research (guidelines) as more important than primary/secondary (scientific articles, local research) research. Only the difference between guidelines and international scientific articles was statistically significant but the trend was similar for Cambodia-specific studies. Regarding research *use*, it was the local (primary) research that was used for concrete decisions.

We found differences and similarities between the project managers and the local staff. Regarding scientific research, the local staff ranked *scientific articles* lower than the project managers. And the staff did not use articles for concrete decisions in the project. Scientific articles were 'only' used in the sense of Weiss [36]: to 'enlighten' the background of the staff, i.e. to shape the view of the world, to provide arguments in discussions and to give new ideas. This result has two reasons: one refers to linguistic barriers, the other one refers to technical access to scientific articles.

Regarding the first point, the local staff not using scientific articles did not cite reasons regarding the quality of the scientific research results. The staff commented that problems in understanding the abstract texts prevented them from the reading of scientific articles. This brings us to two categories impeding research use compiled by Sauerborn et al.: the "inappropriateness of data for use by stakeholders" and

the "bad communication of results to stakeholders" [11]. Scientists often produce too abstract texts using too many specific terms—contrary to publications of IOs/NGOs, which are understandable and relevant for the daily work of the staff.

In addition, the staff cited problems of technical access and missing Internet-skills as reasons preventing them from the use of scientific articles. Many scientists only publish their research results in international journals. These are not easily accessible for the local staff because of their limited access to the (expensive) journals and the relevant Internet databases. This could explain why the staff did not remember any concrete titles of scientific studies. It could also explain the difference in the ranking of scientific articles between project managers and the local staff: project managers have access through the GTZ-Inter- and Intranet. Problems in research access are specific to developing countries: infrastructure must be set up because a fundamental pre-requisite for research use is the technical access to it. In addition, the capacity to know how and where to search has to be taught, especially in tasks where the workload is big.

The problem of access also concerns *GTZ-sources*. Like the project managers, the local staff considered publications of other organisations to be more important than the GTZ ones, issued by PDD. The staff not having contacts to PDD could not judge the importance and explained this result by their limited access to these sources. It was not the quality that prevented the staff from using GTZ-publications (in addition, the key informant *with* contacts to PDD actually used GTZ-publications). The fact that many of the managers did not know PDD's toolkits and that the staff of the Cambodian project did not know many of the various publications of sectoral projects shows that PDD has weaknesses in fulfilling the role of a research broker, transmitting technical–methodological knowledge to the projects. The reason might be that the role of PDD as a knowledge and information manager is recent [18]. Efforts in strengthening knowledge and information management are currently done by setting up regional networks, databases and newsletters, transmitting research to the projects.

The interviews with the key informants showed us the reason for the use of *local research done by NIPH and GTZ* for decision-making: projects need their own research results to decide on questions related to them. Best practice standards of IOs/NGOs were used to explain technical issues and to brief the staff; this can be done when more generalisable/universal tasks are implemented.

Our results confirm the statements of Haaga and Maaru [12] and Philpott et al. [13]: in this project, we found *a favourable environment* for the use of local research. Research is needed in Cambodia and the project explicitly includes a research-component by building up the NIPH. In addition, regional *links between researchers and practitioners* existed. The staff was linked to scientists of the SEAMEO-TROPMED network and to the Mahidol University in Thailand from the beginning of the project. Furthermore, the research that was used for concrete decisions in the project was locally *relevant research* because it was answering concrete questions: what had to be improved in the Pilot Health Centres GTZ was supporting.

6. Recommendations

Scientists interested in putting their research results into practice should produce different formats for different audiences. (Local) Experts in countries from the South need research results that are clear and include options for decision-making. Even if not all research results might be transferable from one socio-cultural context to another, the results can give ideas about how to address health problems. This could be a way between international standardisation and local adaptation. Formats for practitioners should be written in an understandable language without abstract scientific terms. Texts in scientific language should be reserved to discussions in and between scientific communities.

As far as GTZ is concerned, we saw that technical and scientific information plays an important role for the project managers, the Cambodian case-study shows application problems. In the case that the same or similar problems exist in other projects, more investments in knowledge and information management should be done, especially on the level of the personnel. It seems difficult for only eight staff members at PDD to advise 125 projects world-wide and to establish the relevant tools for knowledge and information management.

GTZ has an extensive structure and various experiences in development co-operation, it has the potential to contribute substantially to international knowledge for health sector reforms. But knowledge and information, including research, should be made accessible in a systematic way also to the local staff. More generally speaking: information should be made flexible and accessible more independently from persons, i.e. through databases or regular distributions of publications to the projects. A way could be to open the Intranet to the local staff. The Internet could be fostered as an effective way to disseminate the publications. Workshops should be set up to train the local staff where and how to find information/research. GTZ should further support research capacity building projects and strengthen the technical access for its staff to research.

Since GTZ's mandate to do its own research is limited, an important task could be to collect and provide sources of secondary and tertiary evidence for the specific needs of projects of technical assistance. This should be done in co-operation with initiatives that are already existing like the Cochrane Collaboration (see http://www.cochrane.org/index0.htm). The review of the current "state of the art" should be at the beginning of new projects. This could be a way to ensure sustainability and accountability of development projects in the future. At the end of the project cycle, a report collecting operational research results as well as project experience should be sent to PDD. Guidelines for the inclusion and transmission of operational research results in and between the projects and PDD should be set up. This would be a way to strengthen PDD's capacities as a broker administering research and information from the projects. The GTZ country-offices could play the role of a "local research broker", facilitating access to research that has been done in a country or a region where GTZ is active.

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