"Participatory" Research for Development Projects: A Comparison of the Community Meeting and Household Survey Techniques*

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I. Introduction

A difficult policy discussion has emerged in the development community about why and how donors should consult with those individuals who are affected by the projects and policy interventions that they finance. It would seem that the input these individuals could provide to donor agencies would be of great relevance to resource allocation and management decisions; debate persists, however, about what kind of systematic procedures donor organizations should institute to obtain feedback from project beneficiaries and what the objectives of such efforts should be.

Within the donor community, this type of consultation with beneficiaries is often termed "participation." This expression is ambiguous at best, because researchers can imply several different meanings when using the term. The World Bank's Social Assessment Group, for example, considers participation "a process whereby beneficiaries influence the direction and execution of development projects rather than merely receive a share of project benefits."[1] Others view the goal of participation to be fulfilled simply if project beneficiaries are consulted about their views at some point during the project cycle. The degree to which institutional change and empowerment of certain groups are intended as results of participation thus varies among organizations and individuals.[2]

Donor organizations have been forcibly reminded of the importance of client feedback by developments in two quite different fields: corporate management in industrialized countries and the work of nongovernmental organizations (NGOs) in developing countries. In today's global economy, corporations in the private sector increasingly appreciate the

0013-0079/99/4701-0002$02.00

value of listening to their customers. Some—notably the American automobile industry in the 1970s—have learned harsh lessons from not listening. Experience with one of the most important movements in contemporary corporate strategy, total quality management (TQM), has repeatedly shown that good managers regularly and systematically listen to and obtain feedback from their clients and use that information to improve their products and services.

Over the past two decades voluntary NGOs, often working at the grassroots level, also have advocated local participation in development projects. Their essential message, however, is that the basic nature of the relationship between donors and the people affected by their projects must change. They argue that project beneficiaries, as well as those hurt by a project, must be involved in decisions concerning the objectives of development initiatives, the normative criteria used to evaluate the success or failure of projects, and the design and implementation of projects. In this new relationship, project beneficiaries could help set the agenda for dialogue with donors and development staff, and would be empowered to act on decisions reached during such discussions. In short, they would take a direct, active role in development decisions that affect their communities and livelihoods.

Under this dual influence—the desirability of feedback from clients and the need to foster their participation in decision making—project managers from donor institutions have begun to seek more information on the extent to which project beneficiaries demand and are willing to pay for project outputs. Such information is necessary both to design better projects during the early stages of the project cycle and to supervise and evaluate projects more effectively. There is also increasing awareness that some projects in some sectors require the participation of project beneficiaries in design, management, and governance in order to assure reasonable prospects of success. Increased use of client feedback and increased participation are both part of a new demand-side orientation toward improving project performance.

Donor agencies use a variety of techniques both to collect information about project beneficiaries' preferences and to promote their participation in project design and implementation. Our focus in this article is the former. There are many reasons to believe that increased stakeholder participation in the project cycle can, in fact, improve project success rates. Involving community members during the early stages of the project cycle allows donors to take advantage of local knowledge and expertise. N. Uphoff catalogs several large bridge and irrigation projects that literally collapsed because of erroneous assumptions made by expatriate planners and project designers.[3] Community involvement has also been shown to increase the likelihood that a project will be socially acceptable and that target groups will benefit from it.[4] Resource mobilization, in the form of materials, labor, or money, might also be facilitated when bene-

ficiaries feel they have had a hand in designing the project to which they are contributing.

If participation is to result in improved project performance, it would seem important not only to consult with individuals affected by a project but also to ensure that information acquired in these exercises is accurate and reliable. Little attention has been given, however, to comparing the range of "participatory" research methodologies available to determine which among them afford donor agencies cost-effective means of obtaining accurate information about the views and preferences of project stakeholders. We seek to contribute experimental evidence to this debate by comparing two research methods: community meetings and household surveys. In July 1994 both research approaches were used simultaneously in Lugazi, Uganda, in an attempt to assess household demand for improved water and sanitation services. The findings of the household survey and the community meetings suggested similar policy recommendations regarding the provision of improved water supply and sanitation services; however, the best practicable sampling strategy for each methodology produced groups with different socioeconomic characteristics. This finding suggests that donor agencies committed to conducting project identification, implementation, and evaluation in a "participatory" manner need more information about the accuracy and reliability of different techniques used to elicit project stakeholder views.

II. A Framework for Comparison

A number of different data collection approaches are currently utilized in research designed to identify, implement, evaluate, and monitor development projects.[5] Whereas a variety of technique-specific handbooks are available to assist agencies in implementing particular data collection strategies, far less information is available regarding the advantages and disadvantages associated with different methods. Practitioners of different techniques generally point to a handful of success stories regarding the accuracy of their findings, but no participatory technique has been systematically evaluated over a large number of projects.[6] We chose to compare one of the most widely used structured approaches—a household survey—with one of the most flexible and least structured methods—participatory community meetings.

The contingent valuation method (CVM) is a technique that is used to elicit information about individuals' willingness to pay for a good or service. The approach is termed "contingent" because the good or service that the respondent is asked to value may be hypothetical. In developing countries, contingent valuation studies are generally administered in an in-person interview during which an enumerator poses questions from a written questionnaire and records a respondent's answers on it. Data collected from respondents are used to estimate a "valuation function," a functional relationship between a respondent's willingness to

pay for a good or service and the respondent's socioeconomic and demographic characteristics. Researchers using CVM surveys rely on econometric techniques both to analyze the data collected and to evaluate the accuracy of their results.[7]

The community meeting is one of a family of research techniques (including focus groups and stakeholder workshops) that emphasizes data collection among groups of individuals. Group data collection techniques are frequently used in Participatory/Rapid Rural Appraisal[8] and are thought to be relatively inexpensive means of eliciting information from large numbers of respondents. The method by which individuals are chosen to participate in a community meeting is generally ad hoc; samples of individuals might be chosen by community leaders, selected at random, or drawn from preexisting organizations (such as cooperatives, neighborhoods, or schools). The discussion in a community meeting is generally led by a facilitator who—perhaps with the aid of a rough outline or discussion guide—introduces specific issues and encourages discussion among meeting participants. Written records of individuals' responses might be kept during a meeting, and collected data are analyzed using summary descriptions, simple tabulations, or more formal content analysis approaches.

A priori it is not clear whether a household survey or a participatory community meeting would be the most practical or accurate method to assess communities' preferences. The advantage of the sample survey is that, if respondents can be randomly selected and answer interview questions accurately, then the laws of probability and statistics can be used to make sound inferences about the preferences of the general population from information about sample households. If participants in both household surveys and community meetings gave accurate responses to questions posed, sample surveys would thus be a superior technique because the participants in community meetings are typically not randomly selected. It is possible to hold community meetings with randomly selected participants (thereby achieving the same generalizability as with sample surveys), although this is rarely done.

The advantage of the community meeting technique is that additional discussion generated by groups of individuals is expected to increase the quantity and quality of information available to those participating. This additional information should reduce the hypothetical bias associated with a hypothetical choice. Moreover, critics of structured interviews argue that researchers can easily misinterpret what survey respondents truly feel or believe as a result of the possibly artificial and inflexible nature of household surveys. It is also possible, however, that the threat of strategic behavior might increase during community meetings if participants realize that they might benefit from exaggerating or misstating their preferences and act on this insight.

Ideally, one would like to compare the results of these two methods

TABLE 1

A COMPARATIVE FRAMEWORK

SAMPLE CHARACTERISTIC	STUDY FINDING	
	Similar	Dissimilar
Similar	Both sets of findings correct or incorrect	At least one set of findings incorrect
Dissimilar	At least one set of findings incorrect	?

with an objective, accurate measure of individuals' preferences based on actual behavior. In other words, one would like to compare what people said during the community meetings and household survey with what they actually did when confronted with real choices. In this project, however, it was not possible to accomplish such a rigorous test of the two research methods. Indeed, only a few studies exist that compare household survey results with actual behavior, and none was found that compared the results of community meetings with actual choices.[9]

The primary objective of our analysis is more modest: to assess whether or not two different research methods currently used by donor agencies to elicit information from project stakeholders yield similar results and whether or not they lead to the same policy recommendations. A framework for this comparison is presented in table 1. We hypothesize that sample characteristics (including socioeconomic and demographic factors) are important variables in explaining individuals' dispositions toward development projects. Our comparison thus focuses not only on the results from the two data collection methods but also on the profile of the samples that these techniques generated. If both the findings and the samples are similar, we would feel more confident in the validity of the findings, the representativeness of both samples, and the accuracy of the two research methods. However, without an independent, objective measure of the findings' accuracy (or socioeconomic and demographic characteristics of the population), we must realize that the two sets of findings could be similar either because they are both accurate or because they are both inaccurate, or that the two samples, while similar to one another, may or may not be representative of the population under study.

If the two samples have significantly different characteristics, but similar findings are generated when the two methods are used, or vice versa, we would conclude that (1) at least one of the methods has yielded incorrect results, or (2) individuals' socioeconomic characteristics do not affect their demand for improved water and sanitation services. If the two techniques generated both different findings and samples with different characteristics, it would be extremely difficult to draw conclusions

about either the reliability of the results or representativeness of the samples.

III. Fieldwork: Lugazi, Uganda

During July 1994, we conducted a study of household demand for improved water and sanitation services in the village of Lugazi, Uganda, for the World Bank–sponsored Small Towns Water and Sanitation Project. The town of Lugazi comprises roughly 20,000 residents and is located in Mukono District, approximately 70 kilometers from Uganda's capital, Kampala. Currently, there is no piped water system in Lugazi; almost all residents obtain water from springs, rainwater collection systems, or water vendors (who also collect water from springs). Households that purchase vended water pay roughly 100 Ugandan shillings (Sh.), or about US$.11, for 20 liters of water.[10] There is also no sewage collection system in Lugazi. Almost all residents rely on some form of pit latrine. The operational goal of our research was to assess Lugazi residents' willingness to pay for different improvements in water and sanitation service levels. We utilized a rapid appraisal approach for data collection and analysis in Lugazi: both the household survey and seven community meetings were completed in roughly two weeks.

A. Household Survey

The household questionnaire was developed over a 7-day period of intensive, iterative design and pretesting. Fifteen college-educated Ugandan men and women served as enumerators, and all interviews were conducted in Lugandan, the most commonly spoken language among Lugazi residents. The survey was administered in 13 of the 15 different districts (called "RC1s") within the study area.[11] A total of 384 interviews were completed, and enumerators reported refusals from only four individuals.

The household survey was designed to obtain information about respondents' current water and sanitation practices, socioeconomic and demographic characteristics, and willingness to pay for improved water and sanitation service levels. Sixteen different questionnaire versions were developed and assigned randomly to respondents by the enumerators. Each version contained a unique combination of prices for improved water and sanitation services; these split-sample experiments allowed us to estimate household demand for improved services at several different prices.

In administering the survey, enumerators first described a system of public taps that might be installed in Lugazi and showed a series of photographs and diagrams to respondents. Respondents were told to imagine that a tap would be within 3 minutes' walking time from their homes, and that water would be available from the taps between the hours of 7:00 A.M. and 7:00 P.M.[12] In addition, respondents were asked to suppose

that an attendant would collect a per-jerrican fee at the tap.[13] Different prices per jerrican—25 Sh., 50 Sh., or 100 Sh. (US$.03, .05, or .11, respectively)—were randomly proposed to respondents. Each respondent was then asked whether or not, if such a public tap system were installed, his or her household would purchase most of its water from the public tap; if the household would continue current practices of water fetching (usually collecting from springs or purchasing from vendors); or if the respondent was uncertain what his or her choice would be.[14]

Next, enumerators described a private, metered water connection to respondents. Individuals who rented their homes (41% of the sample) were asked whether or not they would prefer a private connection if they would be obligated to pay an increase of 10,000 Sh. or 20,000 Sh. (US$10.53 or US$21.05, respectively) in their rent. Homeowners were simply asked if they would install a private connection if the monthly fee were one of the two amounts. For both renters and owners, the monthly fees of 10,000 Sh. and 20,000 Sh. were randomly assigned in different questionnaire versions.

The final set of willingness-to-pay questions focused on respondents' demand for different types of sanitation improvements. All respondents were asked about their willingness to pay on a per-visit basis for a public, ventilated improved pit latrine (VIP) in their neighborhood.[15] The per-visit price for use of the public latrine was 25 Sh. (US$.03) for adults and no charge for children younger than 12.

B. Community Meetings

In addition to the household survey, researchers worked with Ugandan counterparts to conduct a series of participatory community meetings, or open-air gatherings, throughout Lugazi. These meetings were designed to elicit residents' perceptions of their existing water and sanitation situation; to provide information to the community about a variety of possible improvements; to provide a forum for an open community discussion of the advantages and disadvantages of these improvements; and to assess individuals' willingness to pay for these different levels of service. Two Ugandan social workers (community organizers) facilitated the sessions, and each gathering was attended by community members, two or three community extension workers, and local government representatives. Community meetings were held in five of the fifteen districts in the study area. Most of the meetings lasted about two hours; attendance ranged from 50 to 225 people.

Each community meeting began with facilitators introducing the discussion and presenting a local artist's drawings of different types of water sources (e.g., a spring, a water vendor, a public tap). Four or five randomly selected participants were then asked to rank the water sources in order from most to least desirable in terms of water quality, convenience, and cost. This "water ladder" was presented to the full assembly

and discussed. Next, the facilitator asked where on this ladder the group thought they were located now, and where they would like to be. A vote was then conducted, with the facilitator asking individuals to indicate if they would choose to use a system of public taps at a price of 50 Sh. (US$.05) per jerrican or if they would continue their current practice (either purchasing from water vendors at US$.11 per jerrican or fetching from springs without a fee). Participants were then asked if they would install a metered, private water connection if it would cost their household an average of 10,000 Sh. (US$10.53) per month or if they would use the public tap system or their existing sources. Both the descriptions of these service levels, as well as the structure of the referendum questions, were designed to be as close as possible to those offered in the household survey. Given the context of an interactive, lively community meeting, however, some variations in the follow-up discussion about the service systems were inevitable.

In an effort to afford participants in the community meetings the same level of confidentiality maintained for household survey respondents, researchers attempted to use a sort of "secret ballot" approach in the meetings. Each person casting a vote was presented with a kernel of corn. The facilitator then instructed participants to place the corn in one of their hands; for example, a "yes" vote was indicated by placing the corn in the right hand, and a "no" vote by a kernel in the left hand. Participants then extended both, closed hands toward the facilitators' assistants, who carefully transferred the contents of the participants' hands to their own. "Votes" were thus collected in the pockets of assistants without revealing their location to other participants at the meeting. After each collection of corn, the kernels were counted and the results announced to the group. Some of the community meeting participants took this secret ballot quite seriously and made every effort to avoid the revelation of their vote (i.e., not allowing others to see in which hand they had placed the corn kernel). Others saw no reason to conceal their vote from their neighbors and simply extended one open hand—with the corn kernel clearly visible—toward the facilitator.

The meeting facilitator then initiated a similar discussion regarding existing and improved sanitation services. Each participant was asked whether he or she would use an improved public latrine in the neighborhood at a cost of 25 Sh. (US$.03) for adults and free visits for children.

IV. A Comparison of Findings at the Village-Wide Level

Table 2 presents a comparison of our findings from the household survey and the community meetings concerning demand for improved water and sanitation services in Lugazi. The household survey findings suggest that almost 80% of households in Lugazi would utilize a system of public taps if the price of water were 50 Sh. (US$.05) per jerrican; the community meeting findings indicate that this proportion is roughly one-half.[16]

TABLE 2

VILLAGE-LEVEL REFERENDA RESULTS FOR THE HOUSEHOLD SURVEY AND COMMUNITY MEETINGS (Percentage of Households Accepting Scenario)

	Community Meetings	Household Survey
Demand for public taps: proportion of households that would use a public tap system for a fee of 50 Sh. (US$.05) per jerrican	54–56* (N = 979)	78 (N = 148)
Demand for private connections: proportion of households that would connect to a piped system for 10,000 Sh. (US$10.53) per month	25 (N = 932)	32 (N = 93)
Demand for public latrines: proportion of households that would use a public latrine for 25 Sh. (US$.03) per use (children free)	42–45* (N = 692)	37 (N = 370)

NOTE.—N refers to the number of respondents answering the household survey question or voting in the community meeting referendum.

*Community meeting and household survey findings are significantly different ($P < .01$).

The community meeting findings indicate a slightly higher demand for public latrines than do the household survey findings (42%–45% vs. 37%, respectively). The two methods yield comparable results regarding the demand for private water connections. The results of the household survey suggest that almost one-third of households would connect to a piped water system at a fee of roughly 10,000 Sh. (US$10.53) per month, whereas the community meeting findings suggest that this proportion is approximately one quarter. The difference in these estimates, however, is not statistically significant.

From a policy perspective, the differences in the findings regarding private connections and public latrines are not significant. Even in the case of public taps, the difference in predicted usage rates is not likely to translate into different policy recommendations to a donor agency regarding improved water service to Lugazi. Planning for a new water system in Lugazi should be based on the fact that a substantial minority of households wants and is willing to pay for a private metered connection, and that most unconnected households will eventually obtain their water from neighbors with connections—not from public taps.[17]

The similarities and differences among the findings from the two data collection techniques are better understood alongside a comparison of the samples drawn for the two exercises. Dissimilar sampling procedures were used to identify participants in the two samples. For the household survey, census data were consulted to determine the relative

contribution of each neighborhood, or RC1, to the total population of Lugazi. Researchers then determined how many household interviews were to be completed in each RC1 in order to maintain this proportionality. Because no reliable census data were available at the household level, enumerators were instructed to walk systematically through the district and interview the head (or his or her spouse) of every fifth household they encountered.

This strategy may have introduced particular biases in the sample. Daytime interviewing, for example, could have resulted in the overrepresentation of individuals who are unemployed, homemakers, or elderly. In addition, enumerators assigned to poorer residential areas might have interviewed disproportionate numbers of affluent residents because the mud and wattle structures of the poor were often difficult to identify as dwellings.

In contrast to the sampling strategy used in the household survey, an approach termed "purposive sampling" was used to select those RC1s in which community meetings were held.[18] Rather than convening such meetings in each of the 15 districts, researchers selected five RC1s in Lugazi with the intent of representing the range of socioeconomic conditions in the village. Meetings were thus held in the most and least affluent districts (Nkoko and Geregere, respectively); two lower middle income districts (Kinyoro and Kikawula); and one upper middle income district (Nakazadde). Within each RC1, individuals who participated in the community meetings were simply those who chose to attend the meetings. RC1 chairpersons and local extension workers cooperated with researchers by announcing the meetings and encouraging households to attend.

The biases associated with purposive sampling included the risk that only individuals with strong feelings about improved water and sanitation services—or those with little else to do—would attend the community meetings. In Lugazi, however, this type of bias is somewhat minimized by a strong tradition of community meetings and social pressure for all residents to attend. Indeed, most households have a small booklet in which their attendance at such events is recorded by their RC1 chairperson's signature.

The sampling practices used in the two research approaches did, in fact, yield different socioeconomic characteristics, as illustrated in table 3. A comparison of those socioeconomic and demographic characteristics from both the household survey and the community meeting data indicates that with respect to gender, men and women were roughly equally represented among the respondents in both the survey and the community meetings. In addition, about 40% of respondents in both samples use primarily vended water (as opposed to water fetched from springs or other sources) in their homes. The samples diverge, however, with respect to tenure status. Fewer than a quarter of community meeting

TABLE 3

SOCIOECONOMIC, DEMOGRAPHIC PROFILE OF SAMPLES

	Household Survey Sample	Community Meeting Sample
Percent male	52 (N = 384)	49 (N = 979)
Percent using primarily vended water	41 (N = 383)	43 (N = 910)
Percent homeowners	41 (N = 384)	22* (N = 563)
Percent using electricity in the home	54 (N = 384)	29* (N = 769)

NOTE.—N refers to total sample size analyzed.

* Community meeting and household survey findings are significantly different ($P < .01$).

participants own their homes, whereas over 40% of survey respondents do. Similarly, fewer than one-third of those attending the community meetings reported having electricity in their homes, yet almost 60% of those in the household survey sample have service. Because these two criteria—tenure status and electricity—are likely to be good proxies for wealth, we believe that the sample of individuals who participated in the household survey was on the whole more affluent than that for the community meetings.

Referring back to table 1, we thus find that the lower left cell best describes the comparison of the household survey and community meeting findings (i.e., the study findings from the two approaches are similar, but the samples are different). In addition, we are unable to control for sample differences using statistical methods. Not only are some of the household survey sample sizes for the individual districts too small, but data were recorded as counts or averages during the community meetings (i.e., not at the household level or for particular participants).

To analyze the effect of the sample differences between the household survey and the community meetings, we thus utilized the relationship between socioeconomic status and demand for improved services found in the household survey data. Because Lugazi residents were, by and large, unable to provide enumerators with estimates of their annual income or expenditures, we classified each respondent in one of five "wealth groups" based on a series of wealth proxy criteria: assets (including radio, television, automobile, and bicycle); rental property; electric service; and home ownership. The groups thus represent ordinal, rather than cardinal, wealth rankings; they are numbered from one to five, one being the least affluent. Figure 1 illustrates the association between wealth group classification and demand for public taps, private connections, and public latrines.

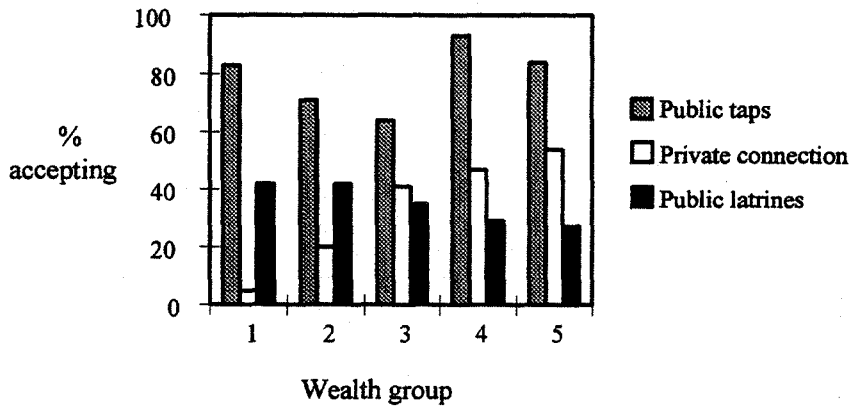

FIG. 1.—Association between wealth group and demand for improved water and sanitation services; Lugazi, Uganda (from the Household Survey).

Economic theory does not suggest a clear relationship between a household's wealth and its demand for public taps, and the relationship between wealth and demand for public taps in figure 1 is indeed ambiguous. Roughly 85% of both the poorest (group 1) and richest (group 5) households expressed a willingness to purchase water from a public tap system at a price of 50 Sh. (US$.05) per jerrican. The highest demand was recorded among households in wealth group 4, and the lowest demand among those in group 3. This figure suggests that we should not necessarily see a higher demand for public taps in either the survey respondent group or the community meeting group. The more affluent household survey sample did, however, express a significantly higher acceptance rate of the public tap scenario (78% vs. 55%–56%). This finding suggests that some other factor(s) influenced demand among members of the two groups. One possibility is that individuals in one or both research exercises did not reveal their true preferences for a public tap system. Survey respondents, for example, might have exaggerated their willingness to pay for a public tap system in an attempt to please their enumerators; participants in the community meetings might have been temporarily swayed by arguments posed by a vocal minority opposing the public tap system. On the other hand, Lugazi residents may have expressed their views about a public tap system honestly in both the survey and community meetings. The differences between the findings of the household survey and community meetings might be attributable to factors such as respondents' proximity to water sources or the number of children available to fetch water in the participants' households.

Figure 1 does suggest a clear and positive association between wealth and acceptance of the private connection scenario at an average price of 10,000 Sh. (US$10.53). This is consistent with economic theory

and with common sense: affluent households are better able to afford the convenience of water piped into their homes, and homeowners (wealthier individuals) are likely to express greater interest than renters in investing in this level of service. Although demand for private connections among the more affluent household survey respondents is higher than that of the community meeting sample (33% vs. 25%, respectively), this difference is not statistically significant ($P > 0.10$).

Regarding the demand for public latrines, we find that the higher demand among community meeting participants concurs with the relationship between wealth and demand for public latrines observed in the household survey data in figure 1. As wealth increases, demand for public latrines decreases, probably because wealthier families have already taken steps to meet their sanitation needs by making improvements to their private pit latrines. Indeed, over 60% of the households in wealth group 5 have private latrines for the exclusive use of household members. We would therefore predict a higher demand for public latrines among the community meeting members, and this is, in fact, what we observed.

We thus find that the demand for public latrines is clearly consistent with the differences in the socioeconomic profiles of the samples. In the case of public taps, a significantly higher acceptance rate was observed among household survey respondents, whereas we would predict no such difference. A slightly higher proportion of household survey respondents than community meeting participants accepted the private connection scenario, which is consistent with our expectations (although the magnitude of the difference is not as large as we might have expected).

It is possible that the treatment of "don't know" responses among the household survey data and abstentions from the community meeting referenda could help explain the differences in the proportion of "yes" and "no" answers recorded by researchers using these two techniques. Not only is the number of abstentions in the community meetings unknown—facilitators were able to record only the number of raised hands or votes for a particular service level—but it is likely that the motivations for abstentions are varied. In the district of Nakazadde, for example, residents refused to complete the referendum on public latrine service, protesting that such delicate subject matter should not be discussed in an open-air setting. It is possible that other individuals did not cast votes in the community meetings simply because they had no preference or did not know their preference at the time of the gathering.

Individuals interviewed in the household study did have the opportunity to express uncertainty regarding each level of service described by enumerators, but only 3% of respondents in the survey sample indicated that they were unsure about their demand for a public tap system at a price of 50 Sh. per jerrican. Five percent and 3% of respondents gave "don't know" or "not sure" answers to the valuation questions on pri-

vate water connections at 10,000 Sh. per month and public latrines at 25 Sh. per visit, respectively.

V. Subsample Analysis

It is possible that irregularities in the data collected in particular districts could create the appearance of differences across the village-level findings as a whole. To examine this issue, we compared a restricted data set from the household survey that contained information only from those five districts (RC1s) in which community meetings were held with the community meeting results. In this comparison, the difference between the estimated acceptance rates for public latrines in the household survey and community meeting samples was no longer significant; however, the difference between acceptance rates of the public tap scenario remains statistically significant. This finding might suggest that the sampling strategy used for the community meetings omitted valuable information from the analysis. It is also possible, however, that individuals in these five districts have relatively homogeneous preferences regarding improved water and sanitation services as compared with residents of other RC1s, or simply that the findings from the two exercises are more similar by chance.

The differences in the household survey and community meeting findings could also be the result of a few anomalies in the data from one or two districts. Within each RC1, our ability to compare findings from the valuation question is limited by small sample sizes for the household survey group.[19] In general, however, the same inconsistencies observed at the village level are also observed in the five districts. In the district of Geregere, for example, residents who attended the community meeting were generally less affluent than those who participated in the household survey (table 4). As with the village-level findings, survey respondents in Geregere had a significantly higher demand for public taps but a significantly lower demand for private connections as compared to those who attended the district's community meeting. The two groups had similar acceptance rates for public latrines, which is also consistent with villagewide results. Similar patterns exist in the remaining four districts.

Finally, if differences in sample characteristics were the primary source of divergence between the findings obtained from the household survey and community meetings, we would expect such divergence to diminish as the two sample profiles become more similar. A matched-pair analysis cannot be conducted with these data because information was obtained at the group, rather than at the individual, level during the community meetings. We can, however, compare the findings from a subset of the household survey respondents whose overall socioeconomic profile closely resembles that of the community meeting participants. Specifically, observations from the household survey data set were

TABLE 4

COMPARISON OF COMMUNITY MEETING AND HOUSEHOLD SURVEY FINDINGS FOR NEIGHBORHOOD OF GEREGERE; LUGAZI, UGANDA

	Community Meetings	Household Survey
Vended water: percent using as primary water source	29 ($N = 140$)	46† ($N = 57$)
Electric service: percent with home service	16 ($N = 142$)	56* ($N = 57$)
Tenure status: percent home-owners	17 ($N = 140$)	37* ($N = 57$)
Demand for public taps: proportion of households that would use a public tap system for a fee of 50 Sh. (US$.05) per jerrican	69 ($N = 222$)	95†‡ ($N = 21$)
Demand for private connections: proportion of households that would connect to a piped system for 10,000 Sh. (US$10.53) per month	52 ($N = 143$)	23†‡ ($N = 13$)
Demand for public latrines: proportion of households that would use a public latrine for 25 Sh. (US$.03) per use (children free)	60 ($N = 140$)	47 ($N = 57$)

NOTE.—Each N represents the total sample size analyzed.
* Findings are significantly different ($P < .01$).
† Findings are significantly different ($.01 < P < .05$).
‡ Small sample sizes may render the statistical test invalid.

randomly selected to create 10 subsamples ($N = 100–305$) that were essentially the same as the community meeting sample with respect to the proportion of respondents who were female, who owned their homes, and who had electric service in their houses.

The findings from these two relatively similar groups are presented in table 5. Despite the relative homogeneity of the participants in each group, disparities remain concerning their expressed demand for improved water supply and sanitation services. The average percentage of survey respondents who said they would use a public tap system in the proportionally matched sample remains significantly higher than that for respondents who expressed an interest in public taps during the community meetings. The difference between the two groups actually increases with respect to private household connections. Only with respect to demand for public latrines did the formation of more socioeconomically

TABLE 5

VILLAGE-LEVEL REFERENDUM RESULTS FOR ORIGINAL HOUSEHOLD SURVEY SAMPLE, "MATCHED" SURVEY SAMPLE, AND COMMUNITY MEETINGS (%)

	TYPE OF SAMPLE		
	Original HS	Matched HS*	Original CM
Respondents who would regularly use a public tap for a price of 50 Sh./jerrican	78	78	54–56
Respondents who would connect to a piped water system for an average monthly fee of 10,000 Sh.	32	39	25
Respondents who would regularly use a public latrine for a price of 25 Sh./visit	37	39	42–45

NOTE.—HS = household survey; HS = matched survey sample; CM = community meeting.

* Mean value for 10 samples (N = 100–305).

similar survey samples result in greater consonance between the survey and the community meeting findings. These results suggest either that some explanation other than sample composition exists for the findings' divergence (such as the methodology utilized for data collection) or that important parameters by which the two samples were matched were omitted.

VI. Summary and Conclusions

In this case study, the differences in the findings from the household survey and the community meetings would not have resulted in significantly different policy recommendations for improving water supply and sanitation service in Lugazi. This finding should be encouraging for practitioners of both techniques. However, the fact that samples with significantly different characteristics were drawn using "best practice" techniques should give us pause. One would expect households' preferences for improved water and sanitation services to depend in part on the households' socioeconomic characteristics. To the extent that different participatory methods obtain preferences from different groups of people, we would expect that the results might well differ.

As noted above, it is often difficult to determine which of two participatory research approaches has provided more accurate, reliable information when their findings differ. No household-level data on Lugazi residents' socioeconomic and demographic characteristics are available; it is thus not possible to determine if either the household survey or the community meeting sampling strategies resulted in a sample whose char-

acteristics are representative of the entire population of the village. With regard to the data collected concerning residents' willingness to pay for improved water and sanitation services, we do observe that the data collected during the household survey are quite robust; that is, the range of findings for each valuation question is small, even with reductions in sample size of more than 70% (table 5).

This research represents a preliminary step toward comparing different participatory research approaches. Additional research is needed to determine if systematic differences are commonly observable when data are collected using different techniques and whether particular approaches provide more accurate, reliable information to researchers. The research presented in this article provides one indication that two different research techniques, both reasonably well designed and well executed given the constraints imposed by operational project work, can result in consultation with different samples of individuals. Additional investigation is necessary to understand the causes of such divergence, and, ideally, to test the accuracy and reliability of different participatory research methods. Such efforts should eventually contribute to improved project performance.

Appendix
Independent Analysis of Household Survey, Community Meeting Data

In general, household survey data are analyzed using bivariate and multivariate statistical techniques. The household survey data from Lugazi were analyzed using a probit model.[20] The results of the model are presented in table A1. The monthly fee for unlimited use of the tap as well as whether a household currently uses mostly fetched or vended water are significant at the .01 level; the wealth group of the respondent (ranging between from 1 to 5, or poorest to wealthiest) is significant at the .05 level. The model's chi-square value is 146.42, and correctly predicts 77% of responses. These results, along with the positive sign on the wealth coefficient and negative sign on the price and water source coefficients, provide evidence for increased confidence in the validity of the survey results.

Analysis of the data collected during the community meetings generally consists of checking for internal consistency. For example, each of the districts in which community meetings were held could be classified as relatively more or less affluent than the others (using tenure status and electricity service as proxies for wealth). The "poor" category includes RCIs in Geregere, Kinyoro, and Kikawula; the "wealthy" districts are Nakazadde and Nkoko.

Ceterus paribus, we would in general expect community meeting participants in the less affluent districts to have preferences more similar to one another than to participants in the more affluent districts. As shown in table A2, this was not always the case in Lugazi. Regarding the demand for public taps, participants in each of the poor districts expressed a fairly strong willingness to pay. Only 8% of those attending the meeting in Nkoko were interested in the public tap scenario, while 81% of Nakazadde meeting participants were in favor of

Table A1: Household Survey Data Analysis Results for Public Taps

Variable Name	Variable Description	Coefficient (β)	*t*-ratio
ONE	Intercept	.97	3.19*
PRICE	Price of water: 1,000 Sh., 4,000 Sh., or 7000 Sh./month	−.36	−.60
WEALTH	Wealth group of respondent (1–5)	.17	2.43**
EDUCATION	Number of years of schooling of respondent	.02	.91
VENDOR	1 = Household consumes primarily vended water 0 = Household consumes primarily fetched water	.60	3.64*
GENDER	1 = Male 0 = Female	−.19	−.12
TENURE	1 = Home owner 0 = Renter	.90	.50
CHILDREN	Number of children in household	−.02	−.47

* Finding is significant at the .01 level.
** Finding is significant at the .05 level.

public taps. Conversely, the affluent districts had very similar demand for private connections (approximately 25%) whereas the acceptance rate among the poor districts ranged from 6% to 52%. Without data from Nakazadde, whose participants considered the issue of sanitation to be inappropriate for open-air discussion, comparison of the demand for improved sanitation is difficult, although participants in the poorer districts did express a consistently strong demand for a system of public latrines.

Table A2: Community Meeting Results for Three Referenda

	Percentage Accepting in District (RD1) (%)				
	Kinyoro	Kikawula	Geregere	Nkoko	Nakazadde
Referendum #1: Percentage of households that would buy water from public taps for 50 Sh. (US$.05)/jerrican	68	49	69	8	81
Referendum #2: Percentage of households that would connect to a piped water system for 10,000 Sh. (US$10.53)/month	20	6	52	26	24
Referendum #3: Percentage of households that would regularly use a public latrine for a fee of 25 Sh. (US$.03)	50	42	60	22	missing value

Notes

* We would like to express our appreciation to the following individuals for their assistance during our field work in Uganda: Elizabeth McClelland, Mekuria Wolde-Gabriel, Ezron Rwamwanja, David Kyaddondo, Kisembo Ephraim, John Twinomujuni, James Wambi, Christopher Tumusiine, Bernadette Musisi, Beyene Wolde-Gabriel, Joe Gadek, Graham Jones, Eva Havelka, Anna Dunets, and Leah Jane Whittington.

1. Samuel Paul, *Community Participation in Development Projects: The World Bank Experience* (Washington, D.C.: World Bank, 1987).

2. We have used the designation Systematic Client Consultation (SCC) in referring to the process of eliciting stakeholders' preferences for the goods and services provided by development projects (in Dale Whittington and Jennifer Davis, "A Review and Assessment of Techniques for Systematic Client Consultation" [Report to the World Bank, Washington, D.C., May 1994; hereafter cited as "Systematic Client Consultation"]). We note that the preferences of all groups affected by development projects—not just the ultimate beneficiaries—are relevant to project design and implementation; that consultation, rather than merely the extraction of data, provides more useful information to project planners; and that systematic, rather than one-time, consultation increases donors' confidence in the reliability of information garnered and allows planners to track changing conditions and client preferences over time. At the same time, SCC implies no requirement for institutional change or empowerment.

3. Norman Uphoff, *Improving International Irrigation Management with Farmer Participation: Getting the Process Right* (Boulder, Colo.: Westview, 1986).

4. World Resources Institute, *Participatory Rural Appraisal Handbook: Conducting PRAs in Kenya* (Washington, D.C.: World Resources Institute Center for International Development and Environment, 1990).

5. Seven such techniques are described by Whittington and Davis in "Systematic Client Consultation."

6. See, e.g., Lawrence Salmen, "Beneficiary Assessment: An Approach Described," Working Paper no. 1 (World Bank, Poverty and Social Policy Division, Africa Technical Department, Washington, D.C., 1992); Robert Chambers, "The Origins and Practice of Participatory Rural Appraisal," *World Development* 22, no. 7 (1994): 953; Andrew Stone, "Listening to Firms: How to Use Firm-Level Surveys to Assess Constraints on Private Sector Development," Working Paper no. 923 (World Bank, Country Economics Department, Washington, D.C., 1992); and Robert Mitchell and Richard Carson, *Using Surveys to Value Public Goods: Contingent Valuation Method* (Washington, D.C.: Resources for the Future, 1989). For general discussions of participation in development work, see Michael Cernea, ed., *Putting People First: Sociological Variables in Rural Development* (Washington, D.C.: World Bank, 1985); D. Narandya, *Participatory Evaluation: Tools for Managing Change in Water and Sanitation* (Washington, D.C.: UNDP-World Bank Water and Sanitation Program, 1993); and Uphoff.

7. A comprehensive treatment of the contingent valuation method can be found in Mitchell and Carson. For examples in a developing country context, see D. Whittington et al., "A Study of Water Vending and Willingness to Pay for Water in Onitsha, Nigeria," *World Development* 19, no. 2/3 (1991): 179; and Dale Whittington, John Briscoe, Xinming Mu, and William Barron, "Estimating the Willingness to Pay for Water Services in Developing Countries: A Case Study of the Use of Contingent Valuation Surveys in Southern Haiti," *Economic Development and Cultural Change* 38, no. 2 (1990): 293. For a dis-

cussion of issues that often arise when conducting contingent valuation surveys in developing countries, see Dale Whittington, "Administering Contingent Valuation Surveys in Developing Countries," *World Development* 26, no. 1 (1998): 21–30.

8. See, e.g., Chambers, as well as Jennifer McCracken, James Pretty, and Gordon Conway, *An Introduction to Rapid Rural Appraisal for Agricultural Development* (London: International Institute for Environment and Development, 1988).

9. See, e.g., Charles Griffin et al., "Contingent Valuation and Actual Behavior: Predicting Connections to New Water Stems in the State of Kerala, India," *World Bank Economic Review* 9, no. 3 (1995): 373.

10. During the month of July 1994, the exchange rate in Uganda ranged between 900 Sh. and 970 Sh. to the US$1.00 (in this article we use a conversion rate of US$1 = 950 Sh.)

11. A Ugandan RC1, or resistance council, level 1, is roughly equivalent to a U.S. voting district. Residents in each RC1 elect a chairperson, who in turn appoints a vice-chair and secretary. Each RC1 chairperson also serves on the village-level council, or RC2. The RC1s in our study consist of approximately 1,200 to 4,000 residents and are designated by names (such as Kinyoro and Nakazadde districts) rather than by numbers.

12. Residents of Lugazi typically fetch water from springs between 6:00 A.M. and 8:00 P.M.

13. One standard size jerrican has a volume of 20 liters. Children use smaller sized jerricans (3, 5, and 10 liters) to fetch water. For the purposes of this article, the term "jerrican" will be used to denote the 20-liter container.

14. Household survey respondents were also asked about their demand for a system of public taps at one of three fixed monthly fees (1,000 Sh., 4,000 Sh., or 7,000 Sh.—US$1.05, $4.21, or $7.37, respectively) for unlimited tap use. Analysis of respondents' answers to this question is presented in Appendix A.

15. A ventilated improved pit latrine (VIP) is either a private or public toilet in which each toilet stall has two holes, only one of which is in use at a time. It does not use water; excrement falls directly into one of two adjacent pits. When one pit is full, it is covered and users switch to the other. The pit is not emptied immediately after it becomes full; instead, users wait roughly two years, until the excreta decomposes into manure that can be used in gardens or on crops. The design of the VIP includes a vent pipe to eliminate odors and a fly screen to eliminate flies. A VIP is also a permanent facility, because each pit is lined and can be easily emptied and reused. It is a safe, sanitary means of excreta disposal.

16. The values comprising the ranges for the community meeting findings were calculated using a weighted and unweighted average. Specifically, the number of individuals accepting a particular level of service was simply summed over all community meetings and divided by the total number of individuals attending the meetings. Next, the proportion of individuals who accepted service at each district's community meeting was multiplied by that district's population (as given in the census), and finally, these products were averaged.

17. For a detailed discussion of the policy implications of this research, see Dale Whittington, Jennifer Davis, and Elizabeth McClelland, "Implementing a Demand-Drive Approach to Community Water Supply Planning: A Case Study of Lugazi, Uganda," *Water International* (1998), in press.

18. See, e.g., McCracken (n. 8).

19. Whereas all participants in the community meetings were asked the same price for an improved water supply or sanitation service, the split-sample

experiments conducted in the household survey resulted in subsets of the 384 respondents, each of which received the same price.

20. The probit model could be estimated for the monthly fee public tap scenario only. Such a model for either the pay-by-jerrican or private connection scenario is not possible, because the amount of money each household would ultimately spend per month is dependent on the amount of water it would consume (a quantity currently unknown).