Regional Quantitative Methods Workshop, Cairo, Egypt. CARE International, Middle East and Europe Regional Management Unit (MERMU).

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REGIONAL QUANTITATIVE METHODS WORKSHOP

4 – 8 April, 2004
Cairo, Egypt

Workshop Highlights

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Regional Program Advisor
Acknowledgements

MERMU would like to extend their thanks to CARE Egypt for making available Dr. Wessam El-Beih to assist the facilitation of the Quantitative Methods Workshop in Cairo. Without this support, it would not have been possible to hold this workshop for the Middle East Country Offices. Dr. El-Beih’s assistance and willing support to the trainer John Mazzeo was fully appreciated by all who attended.

To both John and Wessam, a heartfelt thanks for all the effort that went into the success of this workshop.

Mary Picard
Regional Program Advisor
MERMU
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1. Introduction

The MERMU region covers Country Offices in the Balkans (Serbia, Bosnia-Herzegovina, Croatia, Bulgaria, Albania, Kosovo, Macedonia), the Caucasus (Georgia), and the Middle East (Yemen, Egypt, Jordan, Iraq). One of the objectives of the Regional Management Unit is to assist COs in improving the quality of their programming at project and program levels. The basics in design, monitoring and evaluation of projects are an important starting point. The Regional Program Advisor for MERMU has assessed the capacity in most COs and determined that, amongst other skills, the capacity to apply quantitative methods for measuring project-level indicators is inadequate and often the reason projects are not able to report results consistently and accurately to donors, their beneficiaries, and to CARE.

To address the scale of the need for improvement in the use of quantitative methods across COs in the region, a five-day workshop on this topic is planned. This workshop is aimed at M&E coordinators or other project staff for whom such skills are highly relevant. A trainer expert in this area is being recruited to plan and conduct a five-day workshop that will give participants exposure to the essential steps in applying quantitative methods for the purpose of measuring project-level indicators.

The workshop aims to familiarize participants with “the essentials” for using quantitative methods to measure project-level indicators and arrive at meaningful results. Participants should learn what they need to know and do - and, to a lesser extent, how to do it – to make effective use of such methods.

Workshop Content:

The following topics were covered in the training:

1. Research design – formulating a research question (and relationship to indicators); selecting an appropriate research design
2. Brief introduction on the differences between qualitative and quantitative methods and their uses
3. What is a quantitative survey
4. Planning and designing a quantitative survey
5. Sampling – types of sampling, selecting sample type and size
6. Designing a good questionnaire (inc. coding)
7. Pre-testing the questionnaire
8. Guidelines for conducting the fieldwork (how to train enumerators)
9. Use of SPSS software for data entry and analysis.
10. Standards for data entry
11. How to use software programs for simple statistical tests and types of analysis
12. How to report and show results

The key issues are (a) how to ensure the reliability and quality of the data through all of the above steps and (b) how to avoid common errors or pitfalls in each step.
2. Venue
The workshop was held in Cairo, Egypt at the Helnan Shepheard Hotel on April 4 to 8. Country offices agreed that Cairo was the most convenient location for holding a five-day workshop. The Helnan Shepheard Hotel was selected because it offered the best package for a workshop in the downtown Cairo area. The hotel provided acceptable accommodations for the workshop facilitator and participants from foreign country offices. Participants from CARE Egypt commuted to the workshop each day. The workshop space was well maintained and was supplied with refreshments for two breaks during the course of the day.

3. Participants and Facilitators
Country Offices were invited to send a maximum of two participants to the workshop. The senior management of each CO was first asked to fill nomination forms for review by the Regional Program Advisor to ensure the appropriateness of the training for the proposed participants (see Annex B for nomination form). However, not all COs responded in due time with nomination forms for a proper review to be done. In some cases, there was discussion between the CO and MERMU on the choice of nominees but this could not be done for all participants. Partly a function of the diversity of the capacity in the region, the skill level amongst workshop participants was in the end quite wide-ranging. One option would be to allow candidates to take the pre-test in advance and for MERMU to make the selection of participants based on a certain range of scoring.

A total of nine participants were scheduled to participate in the workshop (see Annex C for List of Participants):

<table>
<thead>
<tr>
<th>Country Office</th>
<th>Expected Participants</th>
<th>Actual Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Iraq</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Jordan</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>West Bank</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Yemen</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
<td><strong>7</strong></td>
</tr>
</tbody>
</table>

John Mazzeo,\(^1\) of TANGO International was chosen to be the facilitator for the workshop. John has served as the facilitator for a previous quantitative training workshop in Ohrid, Macedonia for CARE MERMU in February 2004. CARE choose John, based on the success of the previous workshop and high reviews from participants attending that workshop. Additionally, MERMU requested facilitation assistance from Dr. Wessam El-Beih from CARE Egypt for her level of experience, facilitator skill, and familiarity with the Arabic language and CARE Country Offices in the region. Wessam’s assistance was highly valued and contributed to the success of this workshop.

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4. Workshop Activities

The workshop consisted of a combination of lecture, group discussion and group exercises. The lectures were delivered by John using a PowerPoint slide show presentation. Group discussions were initiated to incorporate perspectives and experiences from specific country offices. The group exercises were an opportunity for participants to practice what they have learned so far and apply this knowledge in a way that had some relevant to the kind of work they are doing in their country offices. Group exercises were based on a hypothetical training example.

Day one of the training served as a general introduction to research design that laid the conceptual foundation for future lectures. The topics covered during day one were:

- Differences between qualitative vs. quantitative approaches and recommendations for a ‘mixed methods’ design;
- Major steps of quantitative research from generating research questions to interpreting the analysis;
- Quantitative data collection with emphasis on the design of survey questionnaires.

The second day of training built on the concepts learned in day one, but expanded the training to include database design and sampling. The topics covered during day two were:

- Database design using SPSS;
- Sampling designs (stratified, cluster and multistage complex designs).

The start of day three was spent reviewing sampling design to reinforce what was learned the previous afternoon. The analysis of data using descriptive statistics was the major topic for the afternoon. The topics covered were:

- Introduction to descriptive statistics, measures of central tendency and variability;
- Methods for descriptive analysis using SPSS;
- Techniques for cleaning a dataset in SPSS;
- Computing secondary variables using SPSS.

The following day, the workshop began to address types and applications of interpretive statistics to monitoring and evaluation. The topics covered were:

- Introduction to interpretive statistics;
- Comparing groups for differences
- Parametric means tests and non parametric equivalents.

The last day of training, day five, continued with interpretive statistics to cover correlations. Also covered was tips for writing reports and finished up with group projects.

- Measuring the strength of association between two variables;
- Correlations;
- Writing and interpretation tips;
- Group projects, presentation and discussion;
- Workshop summary.
5. Resources
The trainer supplied participants with a CD-ROM at the end of the workshop that contained a large number of documents of potential use to other COs and staff as well. The broad categories of materials include:

- Lecture notes, Powerpoint presentations, participant notes, and handouts from the workshop
- Training guides on SPSS provided by CARE Kosovo (the CO had a training in SPSS from a local firm the year before)
- The sample dataset in SPSS with the questionnaire, TOR and country map
- A bibliography on quantitative research methods
- 25 electronic documents relating to M&E and quantitative methods
- These materials can be requested from the Regional Program Advisor, however, they will be posted to the DME website: http://www.kcenter.com/care/dme/

6. Results
The workshop had a positive effect on participants’ knowledge of quantitative research methods. On day one, participants were given a pre-test to assess their knowledge of the topics that would be covered during the course of the workshop. The scores ranged from 8 to 30 percent correct responses. The average score for the group was 19 percent. None of the participants were given their scores and the test was not discussed.

On day five a post-test was administered. The post test was the same as the pre test. The range of scores on the post test was 59 to 97 percent. The average score for the group was 81 percent. There was an average score of greater than 50 percent (half of the participants got it right) for three questions (see Annex A, questions 5.1, 6 and 8.4). For the remainder of questions, less than half of the participants answered correctly.

There was a remarkable difference in the scores of participants suggesting that the workshop had a positive impact on enhancing knowledge about quantitative research methods among participants. The range of improvement (difference between pre and post test scores) was 41 and 89 percent. The average improvement in scores between pre and post testing was 62 percent. In contrast to the pre-test, more than half of the participants answered correctly to the majority of questions. Only four questions (see Annex A, questions 5.2, 11.2, 11.4, and 12.4) were answered incorrectly by more than half of the participants. Figure one summarizes the pre and post testing scores by participant.
7. Workshop Evaluation Results

Participants were asked to complete an anonymous workshop evaluation at the end of day five. All of the questions have a range of 1 (lowest) to 5 (highest), except for question 2 which has a range of 1 to 3. Overall, participants rated the workshop highly. The average score for all of the questions was 4.3 out of 5. The highest rated questions were “1. How relevant was this workshop to your work?” (4.7) and “6. How would you rate the trainer in terms of how clear he was in presenting the material?” (4.7). Figure 2 provides a summary of questions and the average rating.

In addition to ratings, participants were asked to provide general feedback and recommendations. Several participants suggested that the training be conducted as the country office level. This would allow the facilitator to tailor the workshop to the country office needs or specific ongoing/upcoming projects. Another common response was to extend the workshop timeframe. Many felt that the workshop was not long enough.
8. Summary

In summary, the workshop addressed most of the important tasks and concepts M&E personnel encounter in quantitative research. Pre and post testing of participants shows that there has been a positive impact on knowledge – an average improvement of 62 percent (difference between pre and post scores). Overall, participants were very satisfied with the workshop – average of 4.3 out of 5.

Based on the testing results and the evaluations, there are two recommendations for future workshops. First, more time needs to be spent on clarifying interpretive statistics or the content of this topic needs to be reduced. Three out of four of the most missed questions on the post test had to do with interpretive statistics. (post test q 11.2, 11.4 and 12.4, rating) and participants gave the quality of the interpretive statistics presentation a 4/5 on the evaluation. Additionally, there needs to be more time spent on sampling design. One of the most missed questions on the post test had to do with sampling design and the participants gave the quality of this presentation a 4/5 on the evaluation. Finally, the possibility of conducting future quantitative research methods trainings at the country office level should be considered since many of the participants highlighted this in their evaluation comments.
Annex A: Quantitative Methods Training Pre & Post Test

The purpose of this test is to assess your knowledge about quantitative methods before the training in order to determine what is learned after the training is complete. You will not be graded on this and are not expected to know any of the correct responses. The answers will not be revealed.

1. Which of these is NOT one of the five parts of a statistical test?
   a) Null hypothesis
   b) Test statistic
   c) Rejection region (confidence interval)
   d) Regression

2. Which of these is the most logical way to proceed with quantitative research?
   a) data management -> data acquisition -> data analysis -> interpretation
   b) data acquisition -> data analysis -> data management -> interpretation
   c) data acquisition -> data management -> data analysis -> interpretation
   d) none of the above

3. A sampling frame is a list of units in the population from which the sample is drawn.
   TRUE     FALSE

4. This is the degree to which we can infer that characteristics of our sample population can be generalized to a larger population.
   a) external validity
   b) internal validity
   c) parametric
   d) none of the above

5. Using the list of responses below, choose which is best for each of the following three questions.
   a) Simple random sample
   b) Stratified random sample
   c) Multistage Cluster sample
   5.1 _____ The most basic random sampling strategy.
   5.2 _____ A random sampling strategy useful in capturing geographically dispersed populations.
   5.3 _____ A random sampling strategy designed specifically for capturing sub populations?

6. Which of the following is part of cleaning a dataset?
   a) identifying and dealing with outlier responses
   b) correcting raw data values
   c) identifying and dealing with logical inconsistencies
   d) all of the above

7. Match the type of data with its most appropriate definition:
a) Interval data
b) Nominal data
c) Ratio data
d) Ordinal data

7.1 _____ Values can only be placed into a variable, but it cannot be organized in any way. (e.g., name, occupation, geographic zone, gender of household head).

7.2 _____ Values can be ordered in ascending or descending order. Values do not provide any indication of magnitude. (e.g., poor-average-good).

7.3 _____ Values can be ordered, distance between values can be measured and values have a true zero. This is the only kind of data that can be divided, multiplied, etc.

7.4 _____ Values can be ordered and have measurable distance between each other. Values do not have a true zero, therefore they are not real numbers. (e.g., date, temperature-C or F).

8. Match the following concepts with the most appropriate definition:
   a) standard deviation
   b) mean
c) median
d) range
e) mode

8.1 _____ Sum of responses divided by the number of responses (synonym is average).

8.2 _____ The most common response (highest frequency).

8.3 _____ Given a set of responses arranged numerically, this number that falls in the middle.

8.4 _____ The difference between the largest and smallest measurements.

8.5 _____ The square root of the variance (deviation from a mean).

9.1 Draw a Normal Curve.
9.2 Draw a Non-Parametric Curve
* For each drawing use a line to show approximately where the (a) mean and (b) median lay and (c) say which (mean or median) is a better measure of central tendency.

10. Which of these definition best represents a Null Hypothesis.
   a) There is no statistically significant difference between the two groups
   b) Group A is statistically greater than group B
   c) Group B is statistically greater than group A
   d) none of the above

11. Match the following statistical tests with the most appropriate definition:
a) Paired T-Test
b) ANOVA
c) One-Sample T-Test
d) Crosstabs (Chi Square)
e) Independent T-test

11.1 _____ Explores the statistical nature of a single variable from a single population. This test determines if our population varies significantly from the known mean.

11.2 _____ Explores the statistical nature of a single variable belonging to the same group at two different points in time. This is done to show change over time in a single unit.

11.3 _____ Examines a group of 3 or more independent samples and tells us whether there is a greater difference in the between-groups variance compared to within-groups variance.

11.4 _____ Explores the relationship between two variables with nominal data.

11.5 _____ Explores the statistical nature of a single variable using two independent random samples drawn from different populations.

12. Use the example below to answer the following questions

You want to measure the difference in wheat production of farmers who use water and soil management techniques and those who do not. You have household level data that indicates the group it is in (water & soil techniques vs. no techniques) as well as the amount of wheat harvested last season. Your dataset looks something like this.

12.1 Draw an example of what your dataset might look like. Be sure to include relevant variables and at least one case with sample values.

12.2 What is your null hypothesis?

12.3 What is your alternate or test hypothesis?

12.4 What type of statistical test will you use if the data is parametric?

12.5 What type of statistical test will you use if the data is non-parametric?

12.6 What if the significance value (p) of our statistical test is 0.02, what do we do?
Annex B: Terms of Reference for Quantitative Methods Facilitator

Reference Background:
This TOR is referenced to consultant agreement no: 05/2004

The MERMU region covers Country Offices in the Balkans (Serbia, Bosnia-Herzegovina, Croatia, Bulgaria, Albania, Kosovo, Macedonia), the Caucasus (Georgia), and the Middle East (Yemen, Egypt, Jordan, Iraq). One of the objectives of the Regional Management Unit is to assist COs in improving the quality of their programming at project and program levels. The basics in design, monitoring and evaluation of projects are an important starting point. The Regional Program Advisor for MERMU has assessed the capacity in most COs and determined that, amongst other skills, the capacity to apply quantitative methods for measuring project-level indicators is inadequate and often the reason projects are not able to report results consistently and accurately to donors, their beneficiaries, and to CARE.

To address the scale of the need for improvement in the use of quantitative methods across COs in the region, a three-day regional workshop on this topic is planned. This workshop is aimed at M&E coordinators or other project staff for whom such skills are highly relevant. A trainer expert in this area is being recruited to plan and conduct a three-day workshop that will give participants exposure to the essential steps in applying quantitative methods for the purpose of measuring project-level indicators.

Objectives of Consultancy:
To plan and conduct a three-day workshop for M&E coordinators or other relevant project staff on the general topic of using quantitative methods for project measurement. The workshop will take place in Cairo, from 04 to 08 April 2004.

Accepting the limitations of a 5-day training, the consultancy should aim to familiarize participants with “the essentials” for using quantitative methods to measure project-level indicators and arrive at meaningful results. Participants should learn what they need to know and do - and, to a lesser extent, how to do it – to make effective use of such methods. Participants will be asked to bring examples of their own work, either of a survey already completed or one which they are about to conduct.

The following steps or phases should be covered in the training but the trainer may also add or modify the proposed topics:

13. Research design – formulating a research question (and relationship to indicators);
   selecting an appropriate research design
14. Quan vs. Qual – brief introduction on the differences between qualitative and quantitative methods and their uses
15. What is a quantitative survey
16. Planning and designing a quantitative survey
17. Sampling – types of sampling, selecting sample type and size
18. Designing a good questionnaire (inc. coding)
19. Pre-testing the questionnaire
20. Guidelines for conducting the fieldwork (how to train enumerators)
21. Use of SPSS software for data entry and analysis.
22. Standards for data entry
23. How to use software programs for simple statistical tests and types of analysis
24. How to report and show results

The key issues are (a) how to ensure the reliability and quality of the data through all of
the above steps and (b) how to avoid common errors or pitfalls in each step.

The consultant may choose to give participants a short test at the beginning of the
workshop and a post-test to see what they have learned. The consultant should also assist
MERMU in determining what follow up training or exercises would be required to
consolidate the learning from this workshop.

**Key Outputs:**
1. A plan and agenda for the workshop; preparation of handouts ready before workshop
2. Brief report to assess capacity and make recommendations to MERMU on further
capacity building
3. Additional materials or resources for participants
4. Key tips on good practices in survey design, implementation, data storage and
   analysis as well as examples of good questionnaires (as part of conducting the
   workshop)

**Key Contacts:**
The Regional Program Advisor, Mary Picard is the key contact for this consultancy. The
Program Advisor will be an important contact for preparation of the assignment and
completion of the work. She will act as resource person during the workshop.

**Timeframe:**
For a maximum of 12 working days:
- 4 days preparation
- 5 days to conduct workshop (in-country)
- 1 day to write report
- 2 travel days

The workshop will be held in Cairo