Chapter 2

Survey Management: An Overview

Careful planning is vital to the timely completion of any project, yet the task of planning and managing a survey is subject to everything from cultural vicissitudes to weather conditions (Warwick and Lininger 1975). Given the endless number of factors (cultural, economic, ethnic, linguistic, political, psychological, sociological, and religious) that influence the implementation of any survey, managing such a project is as much art as science. Hence, the survey manager must have experience in survey implementation and a clear understanding of the objectives of the study.[1] As in all projects, the survey manager must plan, organize, lead, and control the development of the survey (Weeks 2003).

Throughout the survey process technical and organizational decisions must blend the theoretically desirable with the practically feasible (Moser and Kalton 1971). Within this realm the survey manager is responsible for the following:

- Preparing the overall survey program;
- Designing the questionnaire and data entry form;
- Conducting the pilot;
- Selecting the survey firm[2] and defining the financial arrangements;
- Drawing the sample;
- Training the interviewers; and
- Monitoring the fieldwork and developing data quality control procedures.

Often there is the temptation to skip on [survey] preparation in order to move to the field too rapidly. This temptation should be avoided.

—Ghislaine Delaine and others, "The Social Dimensions of Adjustment Integrated Survey"

[1] We assume the survey manager to be a single individual. Although it is possible for a team of staff to take on this role, this is less desirable. Given the functional links among the key steps of any survey, there are obvious externalities that favor a single individual to be the survey manager. Furthermore, a clearly identified and experienced survey manager can ensure that the survey adequately covers policy issues of interest to the data users (Delaine and others 1991).

[2] The survey firm is contracted to do the fieldwork and enter the data.

The chronological sequence and overlap of each activity as well as their functional links must be carefully synchronized. After one step is completed, going back will compromise the next step and, thus, either the timely conclusion of the survey, the accuracy of the results, or both. The survey manager is generally assisted in these tasks by a statistician and a data processing coordinator, but the manager remains responsible for overseeing the collection of accurate information in a timely manner and within budget (Delaine and others 1991). A good survey manager has the ability to anticipate possible sources of error (interviewing, wording of questions, editing, and coding) and delays (national or seasonal holidays, weather conditions, religious festivities, or sample frame inaccuracy) (Moser and Kalton 1971).

Overall Program Design

The early stages of a survey should include a careful review of the literature and talks with experts in the country. This helps conceptualize potential problems. Similarly, a review of previous survey work and discussions with local survey practitioners will help determine what approach works best, what hypotheses have been tested, and which question items are best suited for the specific survey (Warwick and Lininger 1975). This stage also includes an assessment of the survey infrastructure, a careful search for potential partners in implementing the fieldwork and sponsoring the survey initiative, and finally the design of plans for data gathering and entry, reports, presentations, and dissemination.[3]

Questionnaire Design, Pilot, and Data Entry Form

After the research objectives have been identified, the difficult challenge of translating them into a well-conceptualized and methodologically sound questionnaire begins (Warwick and Lininger 1975). In Investment Climate Surveys[4] the core[5] questionnaire represents the starting

[3] It is good practice to address issues of data entry software and coding from the very beginning, although a more detailed discussion and implementation of these issues comes only after the questionnaire is finalized.

[4] Productivity and Investment Climate Surveys, or Investment Climate Surveys, in short, are business surveys conducted by the World Bank. These surveys identify key features of the business climate that foster productivity in a way that allows regional and subregional benchmarking (World Bank 2003).

[5] The core questionnaire is a set of standard questions implemented across countries to enable international benchmarking. Retrieved on June 13, 2005, from http://www.ifc.org/ifcext/economics.nsf/Content/IC-SurveyMethodology.

point. The development of the questionnaire starts soon after general plans have been drawn and ends just days before the start of the fieldwork. Focus groups can identify concerns and experiences of the target population, as well as evaluate questions and clarify definitions (Gower 1993). The initial questionnaire is usually revised many times.

The pilot test in the field is a critical component of questionnaire design. Similarly, the training sessions for enumerators should be considered the last step of questionnaire design, because it often helps identify problems with wording and translation.

As soon as the questionnaire has been finalized, it must be immediately coded and the data entry form developed.[6] A variety of data entry software programs are available, some at no charge.[7] A well-designed data entry form will have two basic characteristics. First, it will have an interface that is a replica of the paper questionnaire. Second, it will include a number of built-in consistency checks to disallow invalid entries. The development of a data entry form is a delicate and complex process. A number of intricate cross-references and checks must be included, which requires a professional programmer. It remains the survey manager's task to determine and identify which, and to what extent, within- and cross-question consistencies should be embedded in the form.[8] The inclusion of too many or too stringent consistency checks will make data entry almost impossible, even when there are errors that can be easily corrected. Conversely, a lax system of consistency checks will defeat the purpose of the data entry form. A delicate balance between these two alternatives must be found.

Once completed the data entry form must be tested, if possible before the beginning of the fieldwork. Testing is of critical importance and attempts to short cut this step could result in delays at later stages of the survey.[9] In the World Fertility Survey, more than 80 percent of

[6] Coding a questionnaire stands for assigning a name to each variable in the questionnaire corresponding to each field in the data set.

[7] A variety of commercially available software programs (Microsoft Access©, SPSS©, and so on) can be purchased, depending on the desired level of sophistication. Simpler but equally effective data entry programs can be downloaded for free from the U.S. Centers for Disease Control and Prevention (www.cdc.gov/epiinfo/) or the U.S. Census Bureau (www.census.gov/ipc/www/imps/index.html). Additionally, the U.K. Association for Survey Computing (ACS) has links to software that can be used for data capture and the different stages of survey implementation (http://www.asc.org.uk/Register/index.htm).

[8] The complexity of the form automatically excludes the use of simple software such as Microsoft Excel©. Excel is data management software and, therefore, not appropriate for this purpose.

[9] Form development and testing generally takes two to four weeks.

all errors found at the first check were due to specification errors and programming errors (Rattenbury 1980).

Survey Firm Selection

Depending on the intricacy of the questionnaire and the complexity of the sample elements, the selection of a survey firm is one of the most difficult and critical tasks. It affects both the *timing* of the survey and the *quality* of the data collected. The survey infrastructure is usually difficult to assess in developing countries and an informed selection usually involves evaluating a wide range of factors, from the geographic distribution of local offices to the number of personal computers owned (box 2.1). An experienced survey manager can easily infer the technical ability of a prospective firm (Grosh and Muñoz 1996) from the quality of written documents, such as survey manuals and recently implemented questionnaires, as well as from the complexity of surveys completed over the past two to three years and those planned in the near future.[10]

Box 2.1

Criteria to Look at When Selecting a Survey Firm

Experience

Questionnaire

How difficult is the content?

How coherent is the content?

How good is the formatting?

How much time does the interview last?

How are sensitive and memory questions addressed?

Sampling

What is the unit of observation?

How difficult is to interview the respondent?

[10] Opinion polls and market research surveys are much easier to administer than the typical Investment Climate Survey.

Box 2.1 (continued)

How large was the sample?
Was the sample nationwide?

Fieldwork
What was the ratio of supervisors to enumerators?
How many reinterviews were conducted?
How good were the supervisor and enumerator manuals?
What was the nonresponse rate due to refusal?

Data management
What kind of data quality assurance did they adopt?
What type of data entry software did they use?
How did they organize data editing and checking?

Resources
Personnel
How many people are on staff in relevant positions (supervisors, interviewers, data entry, programmers)?
What is their level of education?
What is their age range?
How much experience do they have?
Do staff who worked in previous complex surveys still work there?

Equipment
Do they have offices throughout the country?
Do they have computer capabilities?
What software do they use?
Do they have their own e-mail accounts?

Client orientation
What is their data access policy?
What is their reputation?
What are their business affiliations?

Source: Based on Grosh and Muñoz 1996.

Another important factor to consider in the selection process is the organization of the fieldwork. The collection of high-quality data in a timely manner depends on how well field operations are organized. Coordinating and timing the interactions of tens if not hundreds of people at different levels and stages of the survey becomes a vital and yet complex task. The way the prospective implementing agency deals with staffing, scheduling, and coordinating simultaneous activities should therefore be given the appropriate weight in the selection process (Weeks 2003). A survey in which each individual is clearly identified as a part of a team, in which all members are clear about their responsibilities and accountabilities, and in which a well-organized structure facilitates the flow of information and quickly resolves possible conflicts and doubts will definitely have a positive impact on the timing and quality of the data collection process. Key actors in a typical Investment Climate Survey and their functional relationship are shown in box 2.2.

As in all other steps, the procurement process requires a great deal of attention to details. Even when a highly recommended and seemingly well-qualified agency exists less noticeable factors should inform the selection process:

- How unexpected problems are anticipated and addressed;
- What steps are taken to ensure quality;
- Which approach is used to handle the expected bias associated with sensitive questions;
- What strategies are adopted to elicit participation; and
- Which characteristics interviewers and supervisors have (in terms of age, education, experience, and occupation).[11]

The terms of reference (TOR) developed by the survey manager provides guidance on the "technical" requirements of competing proposals. Inadequate TORs have frequently been a source of error in contracting out the fieldwork (Grosh and Muñoz 1996). Thus it is preferable to follow a two-stage strategy. Initially, the TOR should indicate the project objectives and provide a copy of the draft questionnaire as well as a description of the basic minimum data quality requirements. Bidders should be left free to formulate a detailed methodology to achieve the survey objectives. Given the cultural, political, religious, and ethnic characteristics of each country, it is not advisable to apply the same

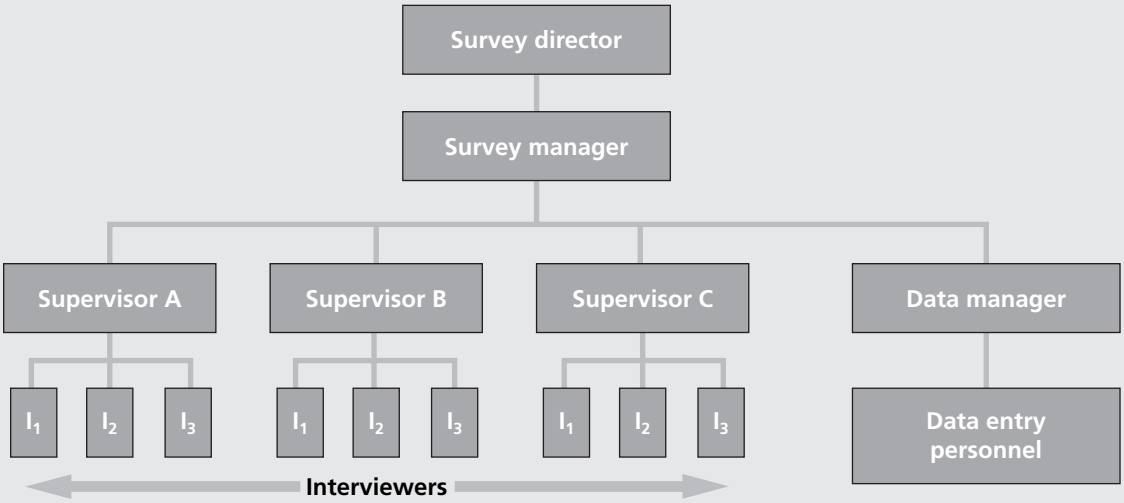
[11] See chapter 5 for a more detailed treatment of the interviewer's characteristics.

Box 2.2

Key Actors and Their Functions in a Typical Investment Climate Survey

Box Figure 2.2.1.

Typical Organizational Structure of Fieldwork



- The *survey director* generally is the head of the agency in charge of the fieldwork. He or she provides professional leadership, coordinates with the survey manager on organizational and financial issues, and provides support to survey implementation especially through community awareness.
- The *survey manager* coordinates with the survey director on more technical aspects of the survey work. He or she helps in designing the sample, plans and supervises the field operation procedures, and contributes to the training session. He or she will also oversee the field supervisors and the data manager (Grosh and Muñoz 1996).
- The *supervisors* assign respondents to interviewers, coordinate their assignments, and ensure that they work efficiently. It is part of the supervisors' responsibilities to monitor and review the quality of the fieldwork, to conduct unannounced field interviews, and to make call-backs as deemed necessary while personally visiting some respondents. Supervisors must review the quality of completed questionnaires, ensuring that interviewers' writing is legible and skip patterns are followed. Unreasonable answers must be flagged and returned to the interviewer for correction, if necessary, through an additional visit. Finally, supervisors facilitate the exchange of information between survey manager and interviewers, make sure that all instructions from the central office are relayed to field workers, and

(*continued*)

Box 2.2 (continued)

ensure that the central office is regularly updated on the progress of data collection (Grosh and Muñoz 1996).

- *Interviewers* set up appointments with the sampled respondents and conduct the interviews following the rules, techniques, and protocols highlighted during the training sessions and indicated in the survey materials. They re-interview respondents, when necessary, to rectify incorrect or incomplete entries.
- The *data entry manager,* along with the survey manager, designs the data entry quality control protocol and oversees the development of the data entry form. He or she supervises data entry personnel and liaisons with the field manager.
- *Data entry staff* code and key-punch electronically the questionnaires completed in the field.

Source: Author's creation.

methodology in every country. Thus, for instance, in Indonesia it appears unnecessary to require call-backs given that standard practice calls for each form to be signed and stamped by the respondent. Once a survey firm has been selected, a second more detailed and comprehensive TOR should be agreed on among the parties.

An often-overlooked criterion in the procurement process refers to the potential measurement error associated with each type of implementing agency. The type of agency conducting the fieldwork—*government agency* or a *private survey company*—can have a different effect on data accuracy depending on the kind of question asked. Sensitive questions about bribes, for instance, are consistently underreported when the interviewer is a government employee.[12] Although the magnitude of the bias varies depending on the specific question, the impact of the underreporting appears to be in the order of 0.3 to 0.6 standard deviations when a government agency is conducting the survey.[13] Nonetheless the survey manager should not rush to the conclusion that private survey companies are always to be preferred. As a matter of fact, the same data shows that using government officers as interviewers has a positive effect on data accuracy by reducing measurement errors for nonsen-

[12] A more detailed description of this phenomenon is presented in chapter 3, on questionnaire design, in the discussion on sensitive questions and subjective questions.

[13] See appendixes 2 and 3 for a description of questions and a complete set of regressions results.

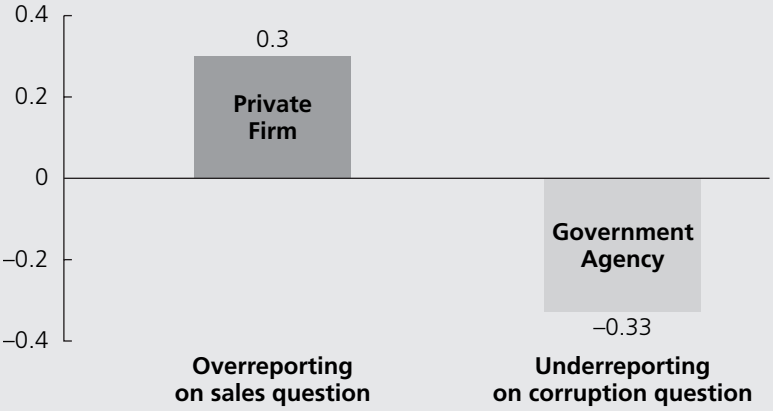
sitive questions. The manager's estimates of sales growth were more accurate[14] when government officials conducted the interview. This is not surprising, because statistical officers generally are better trained and more experienced in conducting business interviews. The magnitude of the underreporting (measured in terms of standard deviations) of corruption questions when government officials conduct the interviews appears similar to the magnitude of accounting data inaccuracy when the survey is fielded by a private firm (see figure 2.1).[15]

Over the years, the financial resources needed to conduct a firm-level survey in developing countries have varied. Once again a number of country-specific factors apply, each having a different impact on the survey budget: a 7-page questionnaire will be priced differently than a 20-page instrument, travel costs are unlikely to be the same in Brazil and in Eritrea, and survey experts are harder to find and more expensive in Africa than in East Asia.

Figure 2.1.

Who Is Asking What?

Reporting Differences When A Government Official, Rather Than a Private Firm, Asks Sensitive Questions



Source: Author's calculations.

[14] The absolute value of the error was more than 17 percent for a private company and close to 1.5 percent for a government agency.

[15] Data accuracy is measured as deviation between the manager's reported value of sales growth last year and the same values calculated from company books.

Household surveys experience shows that 70 to 90 percent of the total survey cost goes to field implementation, while personnel and travel represent the two most important cost categories (table 2.1). Particular attention must also be paid to the internal composition of these two items. Determining the appropriate salary levels across different professional categories is always problematic. The survey job requires months of intense work and it is unrealistic to assume that this can be done without appropriate incentives, particularly for the interviewers. Travel costs, including per diems, will also be a source of resentment if not appropriately estimated. This is clearly a country-specific problem. Nonetheless, accurate planning in terms of the estimated number of visits necessary to complete an interview is essential.

Survey managers must use creativity, diplomatic skills, and expertise to find a solution that is tailored to the country characteristics while being fair to all parties (Grosh and Muñoz 1996). An issue that occasionally surfaces is not only the appropriate rate of pay, but also the relative merits of paying interviewers on a piece rate or by the hour. Supporters of piece rate payment point out the strong economic incentive for field staff and the more efficient use of time. Hourly wage advocates criticize the former approach for providing an incentive to prefer quantity over quality and to "fabricate" answers (Warwick and Lininger 1975). A combination of the two approaches might be the best solution. In this case, for each completed questionnaire, a flat rate would be paid, augmented by variable components, mainly related to travel costs and per diem expenses, with a decreasing weight when the number of visits reaches a predetermined limit. It remains in the survey manger's interest to relate the cost of the survey to the quality of the data collected, and the final rate agreed with the implementing agency should reflect this.

The Sample

Soon after the decision to undertake the survey has been reached, a number of critical decisions must be taken regarding the following:

- The identification of the sample unit;
- The localization of the population list;
- The design of the sampling procedure; and
- The determination of the sample size.

Preparations to draw the sample should start at the earliest possible time given how difficult and time-consuming it is in many developing

Table 2.1
Share of Survey Cost in Household Surveys

	Percentage Weight of Accounting Categories					
	Personnel	**Transport**	**Equipment**	**Consumables**	**Other**	**Sample Size**
Angola	63	22	10	1	4	6,000
Botswana	79	0[a]	10	4	7	7,000
Eritrea	64	0[a]	28	5	3	4,000
Kenya	62	23	3	5	7	7,000
Lesotho	75	5	6	2	12	7,500
Madagascar	31	7	33	13	16	6,500
Malawi	32	17	24	22	5	6,000
Mozambique	61	12	3	12	11	
Somalia	44	18	5	1	33	2,200
South Africa	69	24	2	4	2	30,000
Swaziland	30	4	2	1	63	4,500
Tanzania	78	13	2	1	7	3,000
Zambia	82	5	2	6	5	8,000
Overall	63	15	7	6	9	7,054

	Percentage Weight of Survey Activities			
	Preparation	**Implementation**	**Data Processing**	**Reporting**
Angola	—	84	6	10
Botswana	10	59	22	9
Kenya	—	94	3	4
Lesotho	—	73	19	9
Madagascar	0	79	3	18
Malawi	5	63	16	16
South Africa	1	93	3	3
Swaziland	63	23	8	6
Tanzania	23	72	4	1
Zambia	0	92	6	1
Overall	7	81	6	6

Source: Keogh 2003.
Note: Data refers to household surveys. — = Not classified.
a. Amount included in the personnel costs.

countries to identify a reliable sampling frame. At the end of the fieldwork, the estimated weights must be adjusted to account for frame problems and nonresponse.

Training

When everything is ready for the start of the fieldwork, training should take place. No matter how complex the questionnaire is, and given the average interviewer's quality in developing countries, training remains fundamental to ensure a consistent interpretation and implementation of questions. The survey manager, having extensive experience and a clear understanding of the analytical objective of each question, is the best person to conduct the training. In this process, training manuals are particularly useful, containing detailed information on the general purpose of the survey, instructions on the conduct of the interviews, detailed explanations of the questions, and references to the methodology for recording answers.

Fieldwork and Data Quality Control

The fieldwork is the most time-consuming part of the survey. Although the interview cycle itself must be clearly defined and responsibilities clearly identified (box 2.3), the more complex the questionnaire, the more difficult it is to estimate the exact timing of survey completion.

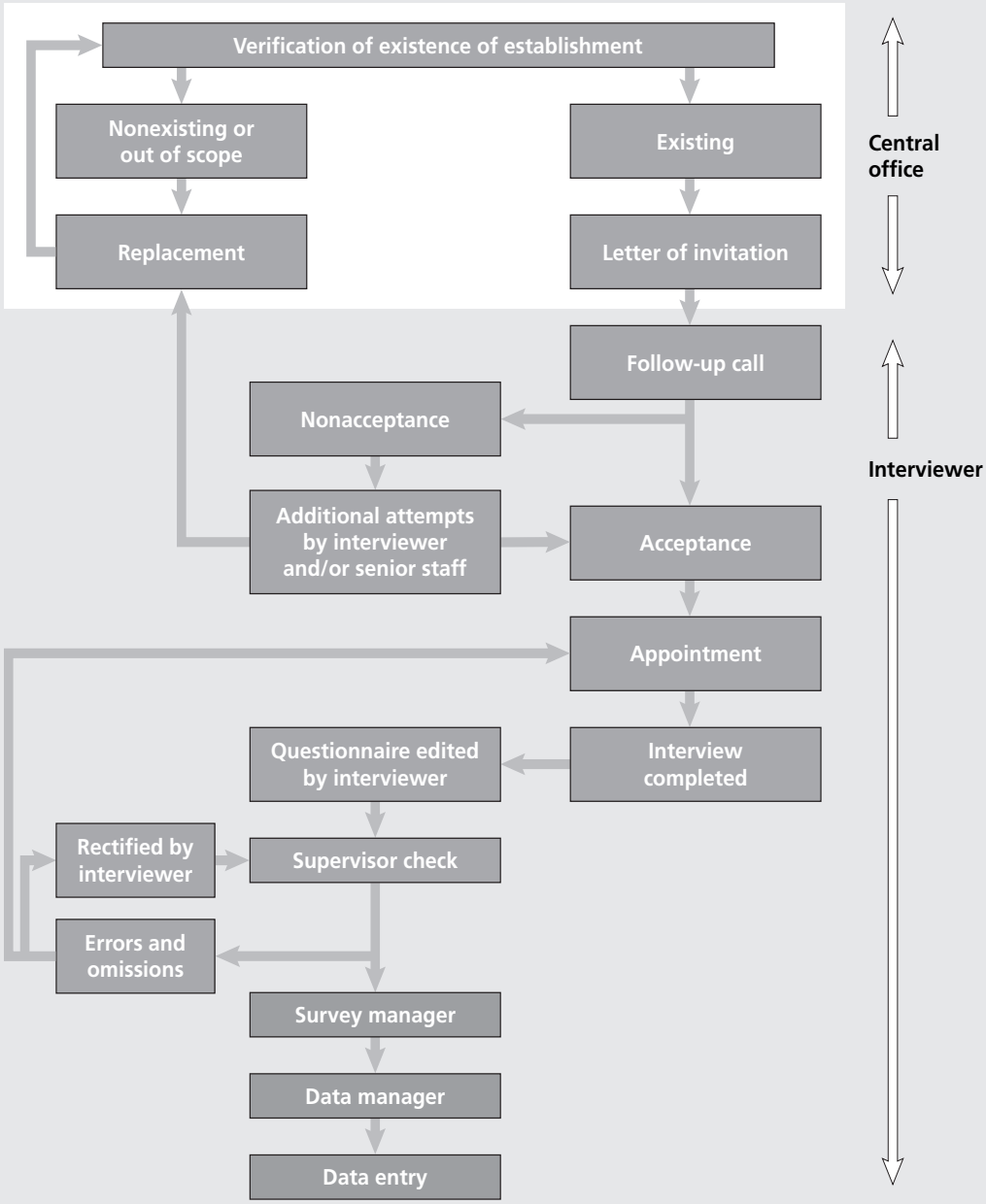
A host of factors influence the chronological implementation of the survey. Apart from some obvious "objective" features such as the *length* of the questionnaire, the *size* and *composition* of the sample, and the *number* of interviewers, a host of other intangible factors, some quite subtle, come into play. For example, *how well* a questionnaire is designed will definitely impact the timing of the interview. The appropriate use of skipping patterns and the clarity of definitions and sentences will not only speed up the interview process but also ensure accurate data. The *quality* of the interviewers, and more generally of the survey firm, is another factor influencing the timely completion of the survey. Interviewers with an unambiguous understanding of the questions, with experience in similar surveys, and with the ability to establish a clear relationship of trust with the respondents will foster higher cooperation and complete the interviews in a shorter period of time. Similarly, if the fieldwork is thoroughly organized, delays are minimized. The *accuracy* of the population list is yet another factor. If the list is up to

Box 2.3

Responsibilities Must be Clearly Identified in the Interview Cycle

Box Figure 2.3.1.

Typical Interview Cycle



Box 2.3 (continued)

The central office should be responsible for the verification of the existence of establishments and for delivering the introductory letter. The interviewer should first approach the respondent with a personal visit to secure participation. Additional coaching, if necessary, to convince reluctant respondents should be handled by the supervisor or survey director. The replacement of ineligible respondents must be carried out according to specific sampling procedures agreed on with the survey manager. The supervisor's role is to manage the fieldwork and to check the quality of the interviews. The completed and verified questionnaire is transferred to the data entry manager whose team will code and enter it in electronic form.

Source: Author's creation.

date, time will not be wasted in locating respondents that relocated or establishments that no longer operate. Last but not least the predetermined level of *response rate* considered acceptable will also impact the duration of the survey. A survey with 50 percent of item nonresponse will no doubt be completed faster than a survey with 90 percent of all questions appropriately answered.

The beginning of the fieldwork marks the start of a number of headquarter (HQ) activities coordinated by the survey manager. As soon as interviewers are in the field, the survey manager should start planning for quality control and data cleaning. While the development of a response rate control program is relatively fast, the development of a cleaning program takes longer. The response rate control must proceed almost contemporaneously to the fieldwork and should be used to feed back instructions to the field manager about how to improve the quality of the data collection process. To achieve this efficiently, data must be sent back to HQ in batches at regular intervals. Data cleaning, on the other hand, should start during the fieldwork but can only be completed after the end of the collection process.[16]

One critical aspect of the survey manager's job is to anticipate potential bottlenecks and take remedial actions before they compromise the timely completion of the whole project. No matter how many factors have been taken into account in the preparatory stage of the survey, the experienced survey manager must be on the lookout for the

[16] Depending on the length of the questionnaire and the degree of accuracy of the cleaning protocol, the development of the cleaning program can take from three to six weeks.

unexpected. Two useful tools are at the survey manager's disposal—one for monitoring the design of the whole project, the other to supervise the progress of the fieldwork.

A first tool used in planning and managing the timing of a survey is the Gantt Chart (see figure 2.2). Defined as a graphic representation of the sequence and link of activities, it can be used to detect slacks and the critical path of the whole project.[17] This chart is a useful tool in identifying what options are available if problems occur during the implementation of the survey. For example, if the survey is behind schedule, the following alternatives could be employed to make up time (Weeks 2003):

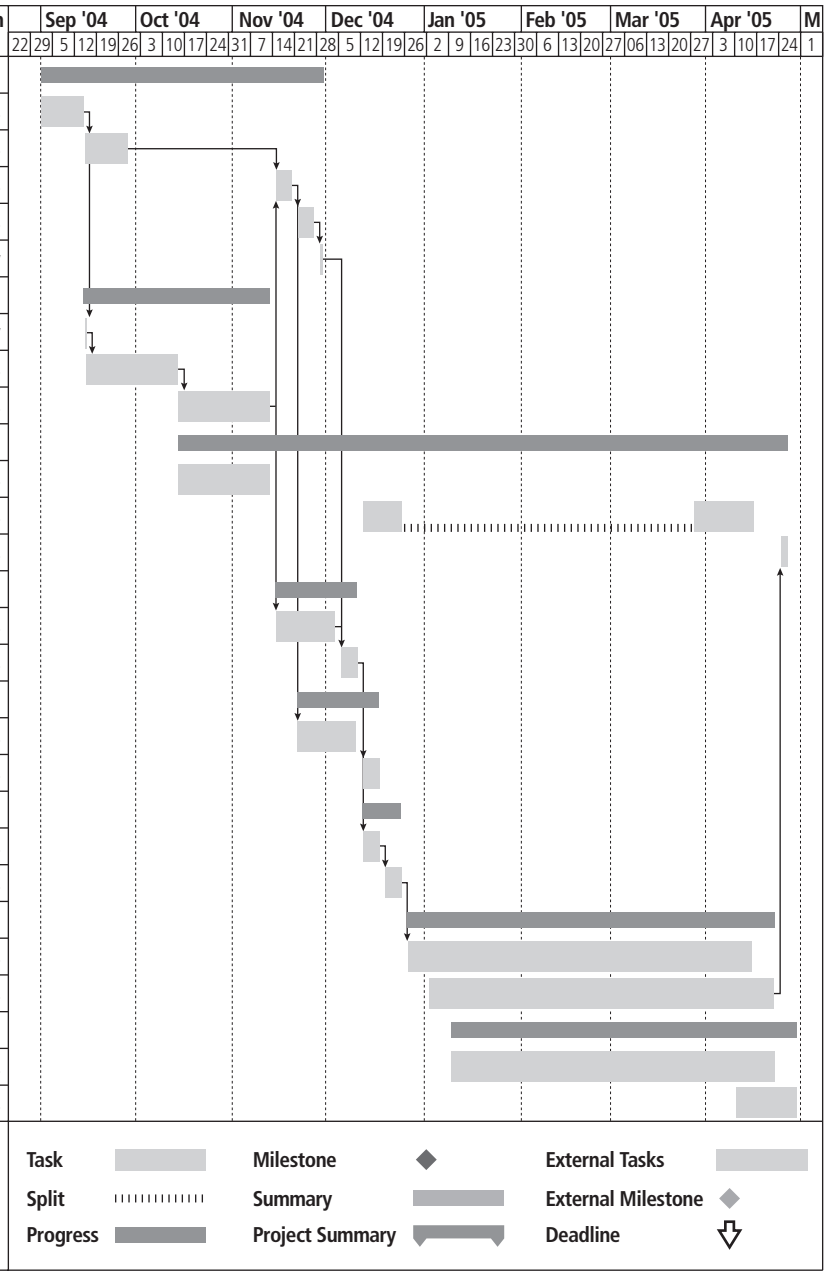
- Start earlier critical path activities by overlapping with predecessor activities.
- Shorten the duration of critical path activities by (1) adding resources if they are resource-driven, or (2) internalizing the loss (that is, lower quality) if not resource driven. This approach works best if employed on earlier activities.
- Move resources from noncritical to critical path activities.

The second tool designed to aid field supervision is the weekly report (table 2.2). This simple form allows the survey manager to effectively monitor the progress of interviews from invitation to completion and to estimate a number of fieldwork performance indicators, such as cooperation rate, response rate, coverage rate, refusal rate, and completion rate.

[17] The critical path is the series of activities that determines the duration of the project. Slack is the amount of time that an activity can be delayed without delaying the project completion date. By definition, the critical path has zero slack (Project Management Institute 2000).

Figure 2.2.
Gantt Charts Illustrate Timing of Survey Activities

ID	Task Name	Duration
1	**1. Questionnaire design**	**64 days**
2	Develop draft instruments	10 days
3	Review & revise draft	10 days
4	Pilot	5 days
5	Translate	5 days
6	Finalize	1 day
7	**2. Procurement**	**43 days**
8	Draft TOR	1 day
9	Receive Proposals	21 days
10	Review, Negotiate	21 days
11	**3. Sample design**	**138 days**
12	Sample design	21 days
13	Identify frame problem	25 days
14	Adjust sampling weight	2 days
15	**4. Manual**	**20 days**
16	Develop draft manuals	15 days
17	Review and finalize	5 days
18	**5. Data Entry Form**	**20 days**
19	Develop	15 days
20	Test & Finalize	5 days
21	**6. Training**	**10 days**
22	Develop Training program	5 days
23	Hold training sessions	5 days
24	**7. FIELD WORK**	**85 days**
25	Interviews	80 days
26	Data entry operations	80 days
27	**8. HQ activities**	**80 days**
28	Response rate control	75 days
29	Cleaning	15 days



Source: Author's creation.

Table 2.2.
Weekly Reports Enable Managers to Monitor Progress

		Nonresponse				Respondents						
Supervisors	Target Sample	Refusals[a]	Out of Scope	Non-contact[b]	Total Sample[c]	Visited	Agreed to Participate	Form Partially Completed	Form Fully Completed	Forms Validated	Forms Entered	Sample Left
Supervisor 1	133	8	2	0	143	78	56	39	22	18	16	115
Supervisor 2	100	3	9	0	112	76	58	53	51	41	40	59
Supervisor 3	130	1	10	0	141	94	78	56	53	50	47	80
Supervisor 4	299	0	25	0	324	207	164	161	157	111	99	188
Supervisor 5	73	0	1	0	74	28	23	47	31	21	15	52
Supervisor 6	265	5	50	0	320	202	140	118	75	74	63	191
Total	1,000	17	97	0	1,114	685	519	474	389	315	280	685

Source: Author.
a. No more attempts.
b. Nonexisting, moved outside study area, wrong address.
c. Target sample + Replacements (refusals + out of scope + noncontacts).