



## Research Notes

### The Library Survey: A Research Methodology Rediscovered

Helen M. Gothberg

*Survey research is based on sound theory and the development of hypotheses. It is systematic and controlled; it uses the language of variables and is concerned with relationships between or among them. It seeks answers to the posed hypotheses and makes use of statistical analyses beyond tabulations. Survey research should not be disregarded as a research methodology because it does not meet all the criteria for empirical investigation. The quality of surveys can be improved if researchers understand the basic differences between descriptive surveys and survey research. Some ways of improving the quality of survey research include adequate planning, sampling, data collection, and the use of appropriate statistical analyses.*

The use of the survey as a methodological approach to the scientific investigation of educational and sociological phenomena was widespread by the end of the 1920s. Librarians' interest in the survey was fostered by the publication in 1926-27 of the first comprehensive survey of American libraries.<sup>1</sup> Literature about library surveys is not extensive. Several books on the subject have been published over the years, with the last one appearing in 1967

by Maurice B. Line and then revised by Sue Stone in 1982.<sup>2</sup> The few books on library research methods that are in print provide additional information by way of a chapter or two. Such a limited amount of publishing related to library surveys is surprising considering that a search of the ERIC database indicates that between 1966 and March 1990 over 4,600 articles and research reports that were surveys had been entered. This number does not reflect in-house surveys that never made it into a major database.

How good are all of these surveys? Robert H. Donahugh suggests that they are time-consuming, costly, and redundant.<sup>3</sup> He pleads with library researchers to exercise restraint and to determine whether the survey under consideration would make a significant contribution to the profession. Robert M. Groves observes that survey research is not an academic discipline, and that there is a lack of a full understanding of survey quality or agreement related to the language of error.<sup>4</sup> Keeping these limitations in mind, it remains safe to say that many of the surveys that appear in the library literature seem

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more focused on what was found than on the soundness of the survey methodology.

### THE PURPOSE OF A SURVEY

"Let's do a survey" is a common call. It is frequently answered in the affirmative without a clear understanding of the significance of the undertaking. Anyone who is considering a library survey should first ask themselves what difference it will make and what *action* will be taken based on the survey results. Too often surveys are taken only to be put on the shelf and forgotten. There is too much time, effort, and money involved in doing surveys for this to happen. To the clarion call to do a survey, the first response should be, "to what purpose?" and the second, "with what effect?" The reasons for doing a survey are many and varied. In his study of college and university library surveys Ernst Walfred Erickson identified eight reasons why library surveys are undertaken.<sup>5</sup>

1. To study a library or libraries in depth and with care.
2. To develop long-range planning for a library or group of libraries.
3. To get a perspective of a library in relation to the history of the state, region, and university or community.
4. To permit the library to discover ways to improve its administration, organization, and services.
5. To discover ways by which library resources can be effectively related and integrated with other libraries in the state, region, or the nation.
6. To note any limitations that might prevent the effective operation of the library.
7. To contribute to an increased understanding of the role of the library, its needs, and its problems.
8. To determine how effective the library is in carrying out its stated mission, goals, and objectives.

This list is not exhaustive by any means, but it reflects where the most energy has been focused in the past. Most writers agree that the purpose of the library survey is the systematic collection of data that will shed light on problems and lead to the

improvement of library services. A good survey also permits analysis that results in a sound interpretation of the data.

### TYPES OF SURVEYS

Broadly speaking, there are two types of surveys, and they serve somewhat different purposes.

*The Descriptive Survey.* This type of survey can be an aid to library administrators in planning, improving public relations, and even marketing. Most descriptive surveys describe one library or a group of libraries within a system or even a state. Such surveys deal with quantitative data and are used to compare with similar statistics from the previous year, or other libraries. They may also seek opinions and/or demographic data about users. These data may be compared with quantitative data about the library by using various kinds of data analyses. The descriptive survey has its place as an aid in helping individual libraries in the decision-making process, or in generating data where none has existed before, but it is limited in scope. A more exacting type of survey is that used in survey research.

*Survey Research.* This type of research may be defined as an inquiry that involves the systematic collection and statistical analysis of data and that *which is based* on well thought out hypotheses. Even a descriptive survey needs to be based on sound goals and objectives. A survey that has research as its purpose differs from the descriptive survey in several ways. First, survey research is global rather than local; that is, the study of one library's users' attitudes is *not* survey research. The study of a group of libraries' users' attitudes may be, depending upon whether the survey meets the remaining criteria.

Second, survey research is concerned with theory building. Fred N. Kerlinger defined theory as "a set of interrelated constructs (concepts), definitions, and propositions that present a systematic view of phenomena by specifying relations among the variables with the purpose of explaining and predicting the phenomena."<sup>6</sup> Theory is based on well-established assumptions in the field. For

example, studies related to communication skill as an important element in the successful handling of the reference interview are based on a well-established body of theory and research in the field of reference librarianship. Theories may or may not be correct, but they form the basis for the development of hypotheses that are tested in many types of research. One of the weaknesses in the field of librarianship, like other applied fields, is a lack of a large body of theory to provide the foundations for research.

Third, survey research is concerned with finding out the truth about a given hypothesis. A hypothesis is a statement that expresses relationships or differences among the phenomena being studied. Kerlinger, citing the American philosopher Charles Pierce, described four ways of knowing: tenacity, authority, intuition, and scientific method.<sup>7</sup> Tenacity has to do with the beliefs that people hold onto even when faced with clearly contradictory facts. For example, the belief that all of the public may be reached by libraries if only the right formula can be found is a case in point. Authority is a belief established by the weight of tradition, supported by public sanction. The belief that university libraries are important to the prestige of the university community they serve is essentially based on the weight of support for this idea. Intuition, or *a priori*, method rests on the rational approach. University librarians and many other educators would agree that it is reasonable to believe that students who have access to a well-staffed and well-stocked library will get a better education than those who do not. The fourth method of knowing has to do with research and the scientific method. This latter is usually considered more dependable in that it appeals to evidence and, as appropriate, meets standards of accountability.

To summarize then, the descriptive survey is primarily concerned with the existence of certain phenomena; survey research is concerned with the relationships among phenomena. Survey research, however, is *not* experimental research. Survey research can be distinguished from experimental or scientific research

mainly by the fact that in a survey the investigator attempts to measure what would have happened even if the study had not taken place, rather than measuring the effects of stimuli that have been deliberately introduced into the experimental climate.<sup>8</sup>

### THE SURVEY AS AN EFFECTIVE RESEARCH TOOL

Survey research falls somewhere between the scientific and the naturalistic methods. Survey research meets several, but not *all* of the criteria for scientific research. Survey research is based on sound theory; it is systematic and controlled; it uses the language of variables and is concerned with relationships between or among them. It seeks answers to posed hypotheses; and it makes use of statistical analyses beyond tabulations. The one criterion that survey research does not meet is that of establishing causal relationships. Survey research is like naturalistic study in that it is concerned with field study; it may, through a process of data dredging, search for the truth by uncovering layer upon layer of statistical data, and it does not assume that all of the variables are tightly controlled. It draws inferences from existing variance in samples or populations by a rigorous process of comparison as opposed to establishing definitive causal relationships as is the case with scientific study.<sup>9</sup>

Although we find many published studies using the survey technique in the library literature, not a large number appear in *Dissertation Abstracts*. (Only 1,284 were located up to December 1990.) Some of the reasons may have to do with the prohibitive cost for a student conducting a survey, but another reason may be a mistrust of the survey method as a reliable research tool. Catherine Marsh defended the use of survey method in the investigation of sociological phenomenon. Marsh suggests that the move away from the survey as a research method may be due in part to a "misguided or even malevolent desire to turn [librarianship] into some kind of technocratic science."<sup>7,10</sup> Where the study of libraries and their services is involved, librarians are for the most part

dealing with existing sociological phenomena. Criticisms of poorly done studies should not damn surveys as a whole; nor should the descriptive type of survey be confused with what is more correctly identified as survey research.

### IMPROVING THE QUALITY OF SURVEY RESEARCH

Librarians have seen that the survey can be a viable tool for research in the field. Understanding the use of the survey in research, which has been discussed above, is highly important. A number of common mistakes are made in developing surveys. Four areas are addressed here that will help researchers to improve their survey techniques. They include adequate planning, sample size, data collection, and statistical analysis.

#### PLANNING

The researcher must recognize that costs are involved. Doing an adequate survey also takes time. One year should be allowed from the inception of the idea to the reproduction of the final report, if it is a funded study, or to the final draft of a publishable article if it is a major study. This timetable assumes that the researcher is involved in other work as well. Time can be shortened considerably by using an outside agency to carry out such an investigation. However, a librarian doing survey research will not be caught short by allowing plenty of time to complete the work. If the study can be accomplished in a shorter period of time, no harm is done. Surveys have their own timetables that are determined by the vagaries of data collection.

Other decisions have to be made in addition to determining costs and time involved. Fundamental to any research study is a thorough literature search. With the proliferation of electronic access to bibliographical databases, there is no excuse for undertaking a study that has already been done. A search of the literature will provide the necessary theoretical background needed for the development of a well thought out hypotheses. Considerable additional personnel will be needed to carry out the study and to collect the

data. In most library surveys, the questionnaire is used, but alternative methods may be more suitable.

#### SAMPLE SIZE

"How large should the sample be?" is a question commonly asked. To some extent the answer is the larger the better; however, reason must prevail. In the most general of terms, the more homogeneous the sample, the less likelihood of sampling error using a smaller sample; the more heterogeneous, the larger a sample should be. In some cases, the entire population may be surveyed, such as a study of state librarians. In this instance the population size is smaller than a sample normally would be for survey research. A general rule of thumb for a survey sample size is around 200 with an over 50 percent return required for reliability, and 60 percent or above highly desirable. A researcher should wonder about the usefulness of reporting survey results with a 30-40 percent return rate.

The size of the sample for a survey can be calculated mathematically, including the use of standardized tables to avoid sampling error. The factors that are necessary for using these formulae are, according to Dennis E. Hinkle and Dale Oliver, as follows:

1. significance level ( $\alpha$ )
2. degree of accuracy (effect size)
3. variance in population error ( $j^2$ )<sup>11</sup>

This procedure is considered appropriate for dichotomous variables as well as those measured by interval and Likert-type scales. The formula for the one-sample case is:

$$n = \frac{(\text{significance level } t\text{-value})^2 (\text{variance})}{(\text{accuracy level})^2}$$

This formula can be used for a two-sample case by multiplying by two. For further exploration of this topic and an interesting discussion of sample size plus the supporting tables for the formula, the reader should see the Hinkle and Oliver two-part article entitled, "How Large Should the Sample Be?" A number of other texts on sampling are available as well.

#### DATA COLLECTION

Many library surveys are conducted us-

ing mailed or hand-distributed questionnaires. With the number of surveys on the rise, people are more reluctant to answer them, including our colleagues who may receive seven to ten a week— or more. A researcher only has to look at the problems the U.S. Census Bureau has encountered to realize that collecting survey data from the public using a questionnaire is a difficult task. Many factors can help to increase returns. When using a mailed questionnaire, the cover letter needs to be short and to the point. It should include the significance of the study, and the reason the respondent's answers are important. In addition, giving the individual an idea of the amount of time it takes to fill it out and assurances of anonymity are equally important. There is no guarantee that a short questionnaire will be received any more favorably than a long one. Gail F. Munger and Brenda H. Loyd reported on a number of studies in this area and noted that the results were conflicting.<sup>12</sup>

There are problems with long questionnaires. A researcher can expect to find more unanswered questions with a long questionnaire because respondents may become bored or tired of answering. One way to deal with this problem is through multiple matrix sampling. This process involves administering the longer questionnaire to a randomly selected number of respondents and a randomly selected number of subsets to the remaining groups in the sample. Two studies reported success using this type of sampling procedure in survey research. Munger and Loyd reported more success in gathering data using a two-page, twenty-seven item survey than with a five-page, sixty-one item survey.<sup>13</sup> In spite of reported success in their own and other studies using matrix sampling, Hallie Pre-skill and Tim L. Wentling concluded that more research was needed on this type of sampling approach to surveys.<sup>14</sup> Improving survey response can be handled in a number of other ways. Sometimes a monetary or other gift incentive may be effective, but it should be pre-tested to make sure it is appropriate. A second mailing can improve the rate of return, but it has not been this writer's experience that this

method increases the response rate among professionals to any great degree— 10 to 15 percent is about the maximum. There has also been some indication in recent surveys carried out by the writer that people prefer a checklist as opposed to writing out answers. Joseph M. Viladas claimed that "repeated follow-up by mail, telegram, telephone, or combinations of these has brought the response up to the 85 to 100 percent range on a number of occasions."<sup>15</sup> Others have suggested hand-addressed mailed surveys, but that seems a luxury that few researchers could afford with a large sample or population under study.

Barbar A. Zusman and Paul Duby found that the use of monetary incentives could improve the return rate of questionnaires over a second mailing.<sup>16</sup> A single mailing averages about 65 cents per address, including copying, envelopes, mailing labels, and postage. (Postage could make it more if it is a long questionnaire.) A monetary enclosure of a dollar is sufficient. This would add \$200 to the overall cost of the first mailing of 200 questionnaires. This amount would be reduced by the need to do a second mailing by \$65 with a 50 percent return. Because many surveys only receive a 30-40 percent return on the first mailing, this could reduce costs to an even greater extent—and save time. Bookmarks could be considered for library surveys as an alternative to cash that has its risks, but weight would need to be taken into consideration. The increased costs of single mailings with incentives over repeat mailings are not great, and the results could be well worth it.

Where data involving opinions are concerned, librarians should consider two underused methods: face-to-face interviews and the telephone. Interviewers need to be very carefully trained and spot monitored, however. One study done in France found that interviewers, "... ignored supervisors' instructions and methodologists' dogmas. They didn't act like scientists are supposed to act: unbiased and neutral."<sup>17</sup>

## STATISTICS

The most common form of statistical

analysis for surveys is frequencies or tabulation. When a study is limited to reporting frequencies, however, it does not tell us a great deal that is useful for survey research. A more meaningful statistic is cross-tabs with chi-square. Chi-square is a nonparametric test. Nonparametric tests are generally used with nominal or ordinal scaling or where there is uncertainty about the population or sample. Chi-square may be viewed as a discrepancy statistic. It tells us about significant associations among the variables. For example, it can tell us whether there is a significant difference in the ways female managers answered questions about delegation of authority than males. Chi-square has its own weaknesses. Two assumptions underlie the test of chi-square: that none of the cells have an expected value of less than one, and that no more than 20 percent of the cells have a value smaller than five. However, this does not mean that the data cannot be used. With today's computer programs, such as SPSS-x, the number of cells can be reduced by combining row and/or column categories. Hand calculations are no longer necessary.

Another useful statistical analysis for some types of surveys is regression analysis. Regression permits us to make predictions based upon the data. With the aid of a computer program, development in applied statistics makes regression analysis far less cumbersome than in the past. David L. Passmore and Dominic A. Mohamed recommend the use of logistic regression in survey research to avoid trudging through thick summaries of survey results reported in numerous tables.<sup>18</sup> While chi-square permits two-way cross tabulations, regression can show complex relationships among variables. An example might be that the graduates from a given library science program are three times as likely to find a job as a librarian as those from another accredited program.

Another way to reduce the amount of data handled in a survey is to make use of factor analysis. This statistical analysis is one of the oldest and best-known data reduction techniques that can be used to reduce a set of variables to a smaller num-

ber. For a more thorough discussion of factor analysis in relation to survey data, see the article by Linda L. Phillips and William Lyons in the previous issue of *College & Research Libraries*.

At least three other statistical tests can be used in survey research. These include conjoint analysis, correlations, and analysis of variance. Conjoint analysis is similar to factor analysis. It is currently a popular technique in marketing research. It is especially useful in attitude studies. Conjoint analysis looks at attributes and benefits of a product that could be adapted to patron attitudes towards the library, how patrons benefit from the product, and the importance of each attribute. Through analysis, the relative importance of each attribute can be measured.

Correlation analysis can be used in survey research, but it is a rather weak measure compared to regression, factor, and conjoint analyses. Correlation characterizes the existence of a relationship between variables. Analysis of variance is used when the research hypothesis incorporates two or more population means. University librarians have a distinct advantage in undertaking studies involving survey research as support groups on the campus can aid in determining statistical methodology. What the researcher needs is an understanding of elementary arithmetic and a fundamental statistics course.

#### SUMMARY

Survey research is a significant way of generating knowledge about libraries, their users or nonusers, library education, and librarians. In designing a survey, care must be taken to understand the differences between the descriptive survey and survey research. Some ways to improve survey research involve adequate planning that accurately assesses time and costs; determining the adequacy of the size of the survey; and various approaches to data collection, including matrix sampling. Various statistical analyses can be used with survey research—some stronger than others. Selecting the right analysis for a survey should be carried out with the

aid of a statistician unless the researcher is well versed in statistical processes. The meaning of the results of a survey will be clarified if a plan for analysis is determined before data collection begins.

Then, interpretations will more accurately reflect patterns in the data and provide a foundation for better understanding of the library or individuals being surveyed.

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