

The hows and whys of survey research



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Executive summary

Organizations today rely on survey research to gather much-needed business intelligence. For example, surveys can help you understand customer preferences about a particular product, gauge employee satisfaction or identify market opportunities.

But survey research is much more than simply asking someone a few questions. It's a multi-step process with a clearly defined protocol for each step. To get reliable results from your survey research, you must be able to plan the survey research project, collect data, access and manage the data easily, as well as report the results. IBM® SPSS® predictive analytics software can help ensure your research project is a success, allowing you to confidently share your results with the decision makers who can act upon them. Effective surveys need to be:

- *Clearly defined*—before beginning, you need to state the goals and objectives
- *Easily completed*—the respondents must be able to easily understand and answer your questions
- *Smoothly processed*—before you can begin analysis, the data must be cleaned and validated
- *Thoroughly analyzed*—so you can get useful, reliable results
- *Timely*—the time between planning and deployment must be short enough to make a difference to your organization

This white paper discusses survey research as a seven-step process, detailing how to maximize your efforts every step of the way. At each stage, it also shows how IBM SPSS predictive analytics technology can improve your results and make the entire survey research process easier and more effective. While the examples provided are commercially oriented, they also apply to the public sector.



Why survey research is important

Organizations conduct surveys to learn the characteristics, behaviors or opinions of a particular population. They seek to answer specific questions about a specific topic, asking “why,” “who,” “where” and “what.” Survey research can help you:

- **Gain much-needed business intelligence.** Frequently, the information you need to better understand your customers or employees doesn't exist. You can learn more about them through survey research.
- **Create more value.** Because, consumers are demanding more value for their money organizations are becoming more customer-driven, so they can respond more quickly and accurately. Needs assessment and satisfaction surveys can provide this valuable information.
- **Face increased competition.** As more competitors enter the market, organizations look for ways to differentiate themselves. Surveys on consumer perceptions of the market and evaluation of competing products help address this issue.
- **Combat shrinking markets.** The presence of more competitors means a potentially smaller share for each organization. Surveys on market needs and customer satisfaction help identify opportunities for future products and services, along with areas at risk of customer attrition.
- **Increase the return on your data investment.** Most organizations are looking to improve the value and return on their data investment. IBM SPSS predictive analytics can merge your survey research data with your customer data to extract even more value from both.
- **Increase profitability.** The results of your survey research can help you reduce costs, retain customers and minimize employee attrition, contributing to a potential increase in profitability.

Areas that benefit from survey research

- Satisfaction measurements
- Customer/employee profile census
- Customer retention
- Complaint tracking
- Product features desired
- Medical errors
- Patient outcomes
- Viewer/readership interests
- Program effectiveness assessments
- Customer acquisition

What exactly is survey research?

While some people may think that doing a survey is simply asking questions, it's actually a process. When survey research is done correctly, it provides valuable information and insights that you can confidently act upon.

The information you receive from survey research enables you to make better business decisions, so you can manage your business more effectively. It can help you meet such objectives as attracting more customers, improving employee retention or reducing medical errors.

However, a survey research project can fail if it is implemented badly at any stage. Common mistakes that can lead to unreliable data include poorly asked questions, data that has been entered haphazardly or allowing the process to take so long that you can no longer take action.

The seven stages of survey research

Getting started

Although you can collect survey data in person, online or by phone, the fundamental nature of survey research is the same for all.

As part of the research process, you need to define your population. Examples include current members of a medical association or people who have used a credit card to purchase items in a particular store within the past six months. If you were to study every member of that population, your research would be called a census. However, conducting a census is usually prohibitively expensive and time consuming.

Most survey research efforts involve studying a sample of the population, which is found using probability methods. The sample must be large enough to attain adequate precision, but bigger is not necessarily better. As your sample size goes up, it can actually result in shrinking returns on precision. At a certain point, you risk wasting resources on too large a sample for minimal increases in precision.

In addition, when you select your sample, you need to make sure that the people who don't respond are similar to those who do respond. Otherwise, your results will be skewed.

A questionnaire or survey will let you ask your sample population a set of standardized questions—via either interviews or self-administered surveys. Once you collect and analyze your data, you can then report and deploy the results.

It's important to remember that every survey you conduct is unique, either in its goals, its target population or the questions it asks. The same questionnaire used on the same population a year later is still different, simply by virtue of the fact that a year has passed. The world may have changed quite a bit in that year, or it may not have. However, you won't have a dependable answer until the new survey is completed.

Popular questions that survey research attempts to answer

- What is most important to customers, employees or patients?
 - What do people want or need in terms of programs, products or services?
 - Who is our customer?
 - How can we compete in the market most effectively?
 - Are we providing value to our members or customers?
 - What areas need improvement?
 - How can we improve our programs, materials, products or services?
 - What are the brand's perceived strengths or weaknesses?
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Figure 1. Survey research can be divided into seven steps, as shown here. IBM SPSS predictive analytics software can assist you along the way by helping to ensure proper implementation, thus avoiding problems that can lead to incorrect results.

Step 1: Planning and survey design

IBM SPSS Statistics Premium

Define your survey objectives and goals

Before you get started, you need to determine your goals, budget and resources—in terms of money and expertise. No survey project should move very far forward without a clear statement of the purpose and goals of the survey.

If you don't know why you and your organization want to conduct the survey, you may be collecting unnecessary data. Make sure there's a real purpose for this effort. If, when questioning your organization, you get a vague answer, such as, "We do it every year," dig for the real motivation.

Once you have a clear objective, you can refer to it whenever you face roadblocks the survey process. Also, since the specific conditions under which you're working may be modified, you may need to reevaluate and adjust your goals accordingly, as the survey planning proceeds.

Always write out explicit and specific goals, so you can refer to them and share them with your organization. The objectives should be as clear as possible. A goal such as "We want to understand why customers of ABC Bank are satisfied" is too vague. Instead, you need to think about the particular issues that you wish to explore and measure. For a bank, these issues might be satisfaction with service, interest rates or hours of operation, for example. Having clear objectives makes it easier to formulate your questions.

Outline your research

Next, you need to develop a plan to implement your mission. Be prepared to know which statistics you'll need to run for your analysis, along with what initial relationships and patterns you expect to find.

Establish a project budget

Mapping an action plan helps you justify your study and budget. It also helps you determine the scope and size of your survey. Before beginning a study, many organizations must prove research has a viable chance of producing results. Be sure to ask:

- How much will the survey cost?
- How long will it take to complete the survey and produce results?

Typically, the major costs of a survey are data collection and data entry. Some methods, such as email or web-based surveys, are likely to result in a lower cost per returned questionnaire than those requiring postage or live interviews.

Plan your schedule

Assume that your first few surveys will take longer than you expect. If you're creating a new survey from scratch, allow yourself extra time to complete the process. New projects involving mail surveys, for example, can take months from start to finish. You can reduce the total time needed dramatically by using existing questionnaires and electronic data collection methods.

Don't shortchange the time needed for questionnaire development, pretesting and analysis. Also, be sure that you don't shortchange the reporting end of the process, which is often rushed. Try to anticipate what types of tables and graphics you'll need to construct to get a jump on the tasks involved in creating them.

Define the population

IBM SPSS Complex Samples (included in IBM SPSS Statistics Premium) can help you study your target population. You need to consider your population's age, education and attention span before you can develop questions and format your survey. For example, a young child may not understand complex questions. Or, older respondents may not understand new phrases or jargon. Other respondents may be unable or unwilling to devote much time to a survey.

Estimate the required sample size

IBM SPSS SamplePower (included in IBM SPSS Statistics Premium) can help identify the appropriate sample size necessary for you to obtain accurate survey results. If the sample size is too small, you may not find significant results and will have to start over. On the other hand, if the sample size is too large, you will have wasted money.

Select a method of data collection

As you plan a survey, you need to determine which method—or methods—by which to reach respondents. For example, you can collect data via telephone, mailed questionnaire, face-to-face interview, email, online or other electronic methods. Sometimes, it takes a combination of methods to get the best results.

The method you choose depends on:

- The population to be surveyed
- The method you use to get a representative sample
- The questions to be asked
- The type of data to be collected
- The level of funds and personnel available

Determine how you will use the results

It's important to think about how you will use the results, including:

- The type of analysis you hope to perform
- The types of reports you will write
- How the information will be used

Organizations often want to use the information they collect to change policies, practices, products or procedures to increase their effectiveness. However, if the information you collect can't be used to support potential decision making, it probably shouldn't be collected in the first place. Your objective when creating survey questions is to keep the survey as brief as possible.

For example, if you were surveying commuters about their trip to work on public transportation, it makes sense to ask them about their potential use of a new subway line only if you want to determine potential demand for a new subway line.

Write the questions

The key to a successful survey is ensuring that your questions are concise and easy to understand—so you'll get valid and reliable information. No matter how well other features of the survey are designed and executed, poorly developed questions will reduce the value of the data gathered.

To the extent that you can, use tested, well-written questions that have produced reliable results before—especially when they've been used in surveys on your specific industry or topic. Some software programs have question libraries built in, which can help guide you through professionally written questions. However, because no single question is usable in every situation, you need to evaluate the appropriateness of those questions for your particular survey research. Pretesting questions is the best method to determine whether a question is correct for your own survey. In addition, IBM SPSS Education Services offers courses that focus on proven methods of effective question writing.

Design the questionnaire

A poorly formatted survey can deter people from responding to your survey. It can also lead to skewed results. There are two key goals to keep in mind when designing a questionnaire: minimize measurement error and reduce non-response.

Your questionnaire should be constructed so that respondents:

- Are motivated to complete it
- Will read all the questions correctly and thoroughly
- Understand how to respond to each question or how to skip, with clear instructions throughout the document
- Can return to the questionnaire easily, if necessary

Pretest the questionnaire

A pretest is a formal review of a questionnaire and the associated data collection methodology. It is used to discover potential problems and make improvements, so you get the best possible results. Typically, no more than 75 respondents are needed for a pretest. The pretest population should be similar in characteristics to the population of your actual survey.

By conducting a pretest, you can:

- Find problematic questions and rewrite them
- Estimate the cost of data collection
- Estimate the response rate—and the necessary sample size
- Estimate the distribution of key variables
- Determine the effectiveness of interviewers, where appropriate

Step 2: Data collection

Once you have planned and designed your survey, you can begin collecting the data. To do so successfully, you need to collect clean, unbiased and up-to-date data in an efficient manner.

Methods of data collection

There is no best method of data collection. Each has its strengths and weaknesses. For example, mail surveys have relatively low costs but typically low response rates in the absence of significant follow-up efforts. Email surveys may incur even lower costs, but can't be used for the general population, because you can't assume that everyone has access to email. Face-to-face interviews are often prohibitively expensive, but are often the method of choice for the lengthiest surveys. Of course, electronic methods, in general, can collect data more rapidly.

Failure from non-response

Many surveys fail to collect data from an appreciable fraction of those contacted. This problem is called "non-response." Non-response, by itself, shouldn't be a cause for concern. But when non-respondents differ from respondents in relevant ways, you need to account for the bias. Software can help you analyze missing-data patterns and account for these non-response variables.

If you find that respondents are systematically different than the non-respondents, you can weight your results so that the sample matches known population values. Then you can draw conclusions more carefully due to missing responses.

Failure from item non-response

Another problem you might encounter in the data collection stage is "item non-response," which occurs when respondents fail to answer individual item. Electronic surveys can help eliminate the problem by using software that allows you to create rules that won't allow the respondent to continue if they don't answer a question.

Step 3: Data access

IBM SPSS Statistics Premium

IBM SPSS Modeler Premium

The data access stage allows you to read the data into IBM SPSS Statistics or IBM SPSS Modeler software for further processing. Of course you may also have important data from other systems that you want to include in your analysis. Both IBM SPSS Statistics and IBM SPSS Modeler software let you read in data from many disparate sources—including flat files, paper surveys with manual entries, online surveys, relational databases and even big data sources. That means you can access and analyze all your relevant data at once.

Step 4: Data management and preparation

IBM SPSS Statistics Professional

IBM SPSS Text Analytics for Surveys

IBM SPSS Modeler

The goal of the data management and preparation stage is to get your data ready for analysis. When you're examining a new dataset, it's important to verify and clean the data, to help ensure your analytical results are accurate. For example, if you have gender data in which "1" is for male and "2" is for female, your data should never have "3" as a response.

IBM SPSS Data Preparation (included in IBM SPSS Statistics Professional) can help you save time by streamlining the process. If your respondents are entering in their own data through electronic surveys, you can set up rules that only accept approved responses, such as "1" or "2". Or if your data is being entered manually, IBM SPSS Missing Values (included in IBM SPSS Statistics Professional) can detect and fix discrepancies. If you don't have a way of verifying and cleaning your data, you run the risk of analyzing bad data—and getting bad results.

Setting up the "codebook"

During the data preparation and management step, IBM SPSS Text Analytics for Surveys will help you set up a "codebook" that provides any variable definition information, including variable names, variable formats and descriptive variable labels (data such as gender or income level) and value labels (numbers assigned to data, such as "1" is for male, "2" is for female). This information is stored in the data "dictionary."

Setting up multiple-item indices and scales

You'll also want to set up multiple-item indices and scales, which combine multiple indices into a single, multiple-item index for such projects as customer surveys. These indices and scales offer a more reliable measurement of interest than a single question can.

At this stage in your research you'll also focus on transforming your data into a structure and form needed for analysis and replacing missing data values with estimates to ensure better summary statistics.

Step 5: Data analysis

IBM SPSS Statistics Professional

IBM SPSS Amos™

IBM SPSS Modeler

Data analysis lets you extract useful information from your collected data so you can make informed decisions. Every piece of your acquired data has intrinsic value. Your challenge at this stage is extracting that value. Careful and thorough analysis lets you better understand your audience, whether it's made up of customers, employees or prospects.

The statistical procedures you employ at this stage depend on what you want to learn and the level of measurement you're looking to achieve. Whether you're running basic analysis such as frequencies or more sophisticated analysis, IBM SPSS Statistics Premium and IBM SPSS Modeler software can provide you with a "statistics coach" that provides guidance through the analytical process—to help you extract as much value as possible from your data.

During data analysis, it's a good idea to keep a record of the procedures you perform or the way you create new variables—to help you reconstruct your analyses if any questions arise when you write your report.

Descriptive data analysis

Before running data through predictive models, you need to understand the data you're going to process. This is descriptive data analysis. By summarizing your data and getting an accurate description of the variables of interest, descriptive data analysis lets you see what's going on, based on your current data. For example, you can learn the satisfaction level of your average customer.

In descriptive data analysis, you typically ask questions such as, "What's the distribution of my data?" or, "What does the average person in my survey score?" Because the data analysis stage can be time intensive, it helps to employ a solution that lets you perform complete analysis, while also allowing you to dig deeply (and quickly) into the data.

Inferential data analysis

Many organizations are doing descriptive analysis to learn about the past. You can take the process to the next step to help learn about the future. Inferential data analysis helps you predict future outcomes, such as which types of customers are most likely to be satisfied or which characteristics describe those employees who are most likely to leave your organization.

If you're doing descriptive analysis but not inferential data analysis, you've already done the hardest part of survey research—without taking full advantage of your data.

IBM SPSS Forecasting (included in IBM SPSS Statistics Professional) allows you to perform inferential data analysis by building a prediction model (such as a regression model) for the outcome you're trying to predict. The model will show which predictors are important and will weigh those predictors by level of importance. For example, if you're trying to predict customer satisfaction, you can determine the importance of such factors as length of time someone has been a customer, the impact of various promotions or geographic location.

Step 6: Reporting

IBM SPSS Statistics Standard

IBM SPSS Modeler

Once you have analyzed your data, you need to report the results. The goal of the reporting stage is to create easy-to-understand results from your data analysis, so decision makers can quickly understand and act upon the insights you've offered.

It's important to display results that highlight the information you want to emphasize. You want to get your point across clearly with reports that are easy to read and easy to interpret. If your audience doesn't understand the point, it's possible that your analysis won't be appreciated.

IBM SPSS Custom Tables (included in IBM SPSS Statistics Standard) generates reports that can be accessed online or via your organization's intranet. It can help your end users make the most of your research results. It also lets you quickly and efficiently create interactive, customizable reports that allow each person to easily interact with the results.

Step 7: Deployment

IBM SPSS Modeler Gold

IBM SPSS Predictive Analytics Enterprise

When deploying your results, you put them in the hands of people who can use them to make a difference, helping increase the return on your analytic investment. Consequently, your reports are most effective when you tailor them for your target audience.

Take action on the results

IBM SPSS Collaboration and Deployment Services allow you and your audience to view and interact with the tables, graphs and charts included in your report. It gives each viewer the ability to pivot rows, columns and layers and drill down to see results in meaningful ways. It saves time by eliminating the need to create a new report each time someone wants a different view of the information. Instead, each person can create the view they want on their own, allowing them to draw conclusions and take action on the information they've received.

Share information easily

IBM SPSS Collaboration and Deployment Services allow you to easily share information you've gleaned from your survey research with customers, partners and the public online. The software lets others view your reports using a standard web browser.

The role IBM SPSS technology plays in survey research

You may already be doing survey research informally by talking with customers and noting the answers. Throughout this white paper, you've seen how and where IBM SPSS technology can help you get more reliable results, in a more time-efficient manner, for better decision-making. IBM SPSS predictive analytics tools can improve the accuracy of your survey research and help deliver better response rates. IBM SPSS technology can help you understand what your target audience wants—and help your organization stay ahead of the competition.

About IBM Analytics

IBM Analytics software delivers data-driven insights that help organizations work smarter and outperform their peers. This comprehensive portfolio includes solutions for business intelligence, predictive analytics and decision management, performance management, and risk management.

IBM Analytics solutions enable companies to identify and visualize trends and patterns in areas, such as customer analytics, that can have a profound effect on business performance. They can compare scenarios, anticipate potential threats and opportunities, better plan, budget and forecast resources, balance risks against expected returns and work to meet regulatory requirements. By making analytics widely available, organizations can align tactical and strategic decision-making to achieve business goals.

For more information

To learn more about how IBM Analytics solutions can help your business, agency or institution make the most of your survey research projects, please contact your IBM representative or IBM Business Partner, or visit the following website:

ibm.com/analytics



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