



DELPHI TECHNIQUE

Purpose

The Delphi technique is a powerful approach that can be used (a) to gather data and opinions from experts (such as identifying primary performance constraints) or (b) to lead to a group decision (such as making recommendations about what to do). The Delphi technique is also referred to as the Delphi method, Delphi approach, Delphi activity, or Delphi study. It was developed by RAND during the 1950s for warfare forecasting, and it relied on panels of experts to provide information in a systematic and iterative manner.

Needs Assessment Applications

The Delphi technique is a data collection tool that you can use to solicit insight from a group of experts in a structured way. In a needs assessment, the Delphi technique is typically used to gain expert input for defining needs, to identify desired results, to prioritize causes, or to recommend solutions. The intention with the Delphi technique is for the iterative process not only to solicit insight from experts, but also to ultimately reveal the areas where experts have consensus in their views. This consensus expert insight can be an invaluable source of information to support decision making about things such as needs, goals, and anticipated outcomes.

The Delphi technique uses a “layered,” or iterative, strategy to gather information and arrive at consensus about a specific subject, situation, need, or goal. The technique is similar to the nominal group technique (see page 166 in part 3B) in terms of its structure. One of the unique features of

the Delphi technique, however, is that the information solicitation and consensus-building processes can be done through either postal or electronic mail. The Delphi technique can be used for planning, problem solving, decision making, or data collection. The information that is generated through this technique typically (a) provides insight about a variety of different alternatives, (b) seeks to correlate expert insight on a specific subject, (c) provides the background information necessary for decision making, or (d) reveals consensus in expert opinions about a particular subject or theme.

Advantages and Disadvantages

Advantages

- The Delphi technique is versatile in terms of its potential application and can, therefore, be used to tackle a very wide variety of issues, subjects, and situations.
- Through this technique, you have the option of setting up a broad and dynamic panel of experts from a variety of disciplines and professional sectors (for example, donors, community organizations, government officials, and academia).
- Location is not a constraint in terms of access to expert insight. This technique accommodates data collection through either postal or electronic mail, making it possible to involve experts from almost any part of the world.
- The iterative process of the Delphi technique promotes reflective and evaluative contributions from experts.
- The technique enables the natural group process of sharing and evaluating ideas and expert insight without the need for an in-person meeting format. Because the objective of the Delphi technique is to achieve convergence, as opposed to divergence, in expert perspectives, it promotes a nonconfrontational format for communication and exchange. Expert contributions also remain anonymous to other participants in the expert panel, which may help participants to feel more at ease with fully and honestly providing their insights and opinions.
- The structured and step-by-step nature of the technique makes it very democratic in nature, giving each invited participant an equal opportunity for contribution.

- Quantitative analysis of the data from a Delphi study is relatively simple and can be done using spreadsheet software (such as Microsoft Excel).

Disadvantages

- If the coordinator of a Delphi activity fails to (a) select a representative expert panel, (b) select a good initial question, or (c) follow the recommended implementation steps for the technique, the outcomes of the activity may be compromised.
- If the Delphi technique is conducted through postal mail, the time required for the process can be lengthy, particularly if the panel of expert participants is located in a variety of different countries. If you decide to use the Delphi approach with postal mail, you should expect to allocate between one and three months for data collection.
- The technique requires sustained involvement from the participants. Participant dropout is, therefore, a risk.
- The viewpoints and judgments that are collected through the Delphi technique are subjective in nature. Thus, the extent of accuracy and comprehensiveness of the data may, in some instances, be uncertain.
- The Delphi technique, although generating valuable information, should not be used as the sole source of information for making definitive decisions about needs or future strategies.

Process Overview

The procedure for the Delphi technique essentially consists of four steps: (a) planning, (b) setting up the expert panel, (c) administering questionnaires, and (d) interpreting final data for decision making.

Planning

1. Form a small group of colleagues to work with you on implementing and monitoring the Delphi study. The Delphi depends on the group's ability to identify and engage a number of experts on the topic, which is often challenging for one individual to manage.
2. Use the list of information required for the needs assessment to determine the specific issue, purpose, scope, and focus of the Delphi study.
3. Develop a time line for the Delphi activity. This time line should include intended deadlines for (a) setting up the expert panel, (b) sending out each

- of the questionnaires, (c) receiving responses to each of the questionnaires, and (d) analyzing and interpreting the final results from the Delphi.
4. Determine how you will define *consensus* from the responses you receive. For example, does a simple majority (51 percent) represent consensus, or is greater agreement required?
 5. Create the first questionnaire for the Delphi study. Ensure that the questionnaire clearly aligns with the scope and purpose of the Delphi.
 - a. The questionnaire can consist of one single question that targets the specific focus area of the Delphi. If a single question is used, make sure that it is an open-response question (that is, a question that allows the respondent to submit his or her own answer rather than being forced to choose an answer). An example might be a question asking experts to identify all possible causes of a specific performance gap.
 - b. Plan on testing the questionnaire before you distribute it so you can make sure that it is worded correctly to elicit the types of information that you are looking for.

Setting Up the Expert Panel

1. Select a panel of experts to match the scope and purpose of the Delphi study. The initial panel should typically consist of between 30 and 50 participants, though more may be warranted in some cases. The specifics of the kind of panel that you create may differ depending on the specific goals of the assessment. Here are some tips:
 - a. Although a larger panel will generate more information on the focus of the activity, it will also increase the data to be analyzed in each phase of the Delphi.
 - b. The panel should include individuals who are experts in the focus area of the study.
 - c. It is advisable that you select participants who have both conceptual and applied (practical) understanding of the focus areas of your Delphi activity.
 - d. If the focus area of your Delphi endeavor extends over several sectors, you may want to invite experts representing each of those sectors.
 - e. You should try to screen the panel to make sure that you have selected a group of participants who represent diverse perspectives about your focus area.

2. Prepare and distribute a letter to invite the experts you want to participate on the expert panel. The letter should include the following:
 - a. The specific scope and purpose of the Delphi
 - b. The general process that will be used in the activity
 - c. The anticipated time commitment the expert will be asked to make (This commitment should include the amount of time that you expect the expert will require to complete each questionnaire, as well as the span of time over which the Delphi activity will take place.)
3. Remember that sustained participation of the expert panelists is essential to the success of the Delphi activity. Consider following up the invitation letters with a telephone call to each invitee.

Administering Questionnaires

1. Send out the questionnaire that you prepared during the planning phase. Make sure that you include directions on when and how responses should be returned (for example, “Please submit your responses to this questionnaire by replying to this e-mail. The deadline for submitting responses is April 2.”).
2. Code the responses by identifying all the elements or factors that are referred to in the responses you receive. For example, if you asked experts to identify all “possible factors contributing to a performance problem,” then your task is to identify each statement referring to a “possible factor” in the responses. Next, you compile all those statements of possible factors into one single list. Make sure that the duplicate references are removed and that each factor represents only one idea or construct.
3. Create a second questionnaire using the list of elements that you compiled in step 2, directly above. In your instructions to this questionnaire, ask the respondents to rate each element on the list in terms of importance or relevance to the focus of the Delphi. For example, provide a scale as follows: “*Low Importance = 1 2 3 4 5 = High Importance.*” Ask respondents to rank each element in the list while using that scale. Make sure that you include directions on when and how responses should be returned.
4. Tabulate the results from the second questionnaire by calculating the mean (average), median (middle), and mode (most) scores, as well as standard deviation (dispersion of scores around the average) and inter-

quartile range (percentage of similar responses). Each can be calculated in spreadsheet programs such as Microsoft Excel.

5. Using your analysis, determine where there is consensus among the experts. Typically median (middle) scores, along with interquartile ranges, are of the most value in determining consensus although how you define consensus can vary from project to project. In their article, Hsin-Ling Hung and his colleagues (2008) identify a number of important considerations in defining and calculating consensus.
6. Drawing from the results of the second questionnaire, develop a third questionnaire with the items from the second questionnaire that had the greatest consensus among the experts. Depending on the context, you will want to determine an appropriate “cut score” for consensus to be able to reduce the list.
7. Conduct a third and fourth round of questionnaires, calculating consensus among experts using the results of each.
8. Remember that research indicates most Delphi applications reach stable consensus among experts (in other words, few changes from one round to the next) after four rounds. If you do not see this consensus, then you can use additional rounds of data collection (five or six in total) or can consider including both median scores and interquartile ranges for each element in the fifth round to help the experts move toward consensus. When you find stability in responses from one round to the next, you can then use those findings in your needs assessment.

Interpreting Final Data for Decision Making

1. Report the final results to the panel of experts; they will be interested.
2. Use the results to focus in on the specific issue, purpose, and scope of the Delphi study, and use the insight from the expert panel as guidance in your needs assessment decisions.

Tips for Success

- Consider seeking endorsement from an influential person for the Delphi activity. This endorsement may help you to solicit and sustain involvement from the experts you wish to involve in the activity.

- Remain in contact with participants throughout the Delphi activity. For example, consider calling each of the experts after you have sent them the invitation to participate. In addition, follow up personally with participants who do not respond to the subsequent questionnaires.
- If possible, plan to provide incentives to participants at each round in the Delphi activity. Incentives can be of either a material or a nonmaterial nature. Following up with thank-you cards or other personalized communication may play an important role in keeping participants involved.

References and Resources

Hung, Hsin-Ling, James W. Altschuld, and Y-F. Lee. 2008. "Methodological and Conceptual Issues Confronting a Cross-Country Delphi Study of Educational Program Evaluation." *Evaluation and Program Planning* 31 (2): 191–98.

Websites

One of the earliest reports on the development of the Delphi technique is "The Use of the Delphi Technique in Problems of Educational Innovations" by Olaf Helmer-Hirschberg, which is available at <http://www.rand.org/pubs/papers/2006/P3499.pdf>.

An article on the art of the Delphi technique is available at http://findarticles.com/p/articles/mi_6820/is_4_12/ai_n28482367/?tag=content;coll.

A descriptive definition, including a history of the technique and valuable resources, is available at http://en.wikipedia.org/wiki/Delphi_method.