

The Delphi Method: A qualitative means to a better future

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*When
quantitative
methods fail*

Attempting to predict the future has been the ambition of countless individuals since antiquity. In the business sector, accurately predicting the future of demand, cash flows, and other factors is crucial. Yet in many instances, such as projecting the effects of a new product or technology, quantitative forecasting methods are not an option because historical data is typically not available. In such cases a reliable forecast must be obtained using qualitative means. The Delphi Method is a reliable and unique methodology appropriate for these instances.

In 1948, the United States Air Force realized the need to anticipate future advancements in technology to protect America. The RAND project was formed to tackle these predictions. The existing methods of forecasting were insufficient to adequately prepare the needed report, because no historical data for this subject was available. As they explored new methods of forecasting, the Delphi method was born. Today businesses, governmental agencies, and organizations use the Delphi method to forecast future events and make appropriate plans for the future.

*Delphi
method
defined*

The Delphi method is a combination of qualitative and quantitative processes that draws mainly upon the opinions of identified experts to develop theories and projections for the future. A group of experts is drawn from several disciplines and professions. A multiple-round survey system is administered to this group over an extended period of time. The goal of this method is to reach a consensus among the group by the end of this multiple-round questionnaire process. The uniqueness of Delphi lies in its reliability, given the variability of human opinion, and in its ability to be administered remotely and without direct participant interaction. It is best used for a fairly simple assessment of new products and developments, but it is one of the most complex methodologies available.

*Steps in
the Delphi
method:*

*1. Identify
problem*

The first step toward implementing the Delphi method is to organize the process in a very specific and thorough manner. Questionnaires should be designed, administrative processes determined, and

total costs evaluated before starting the actual procedures. When a complete outline for the process is finished, the expert-selection process can begin.

2. Select experts

The size of the project being completed will determine the number of expert panels the Delphi Method requires, but each panel should consist of approximately 10 to 18 members. The size of the panel is ultimately determined by the needs and budget of those administering the process. A simple random sampling of respondents is not adequate to form this panel. Unlike traditional statistical surveying, the goal is not to select a representative sample of the population. The whole premise behind the Delphi theory is that the panel members are in fact experts in their field in order to yield more accurate results. The criteria that qualifies an individual as a panel “expert” is determined by those administering the process.

3. Administer questionnaire

Once the expert selection process is finished, a questionnaire is distributed to each panel member for completion. The members are encouraged to draw upon their experiences, and use any historical data, research, or other available resources to help in answering the posed questions. However, panel experts should not consult others regarding questionnaire material, in part to avoid accidental contact with other members of the panel.

4a. Evaluate responses

The first questionnaire usually consists of one or two questions. These are meant to be open-ended questions related to the issue being researched. The experts give their opinion and return the questionnaire to the panel director. The panel director then reviews the responses and uses this information to develop more specific questions to be used in the second questionnaire.

4b. Redistribute questionnaire

The second questionnaire has two major parts: first, the results and responses from the first questionnaire are presented in an orderly format (such as a list or table). The experts rank the result items to establish priorities, and are allowed to review their responses in light of the opinions of other experts, add comments, and change their responses if desired. Second, the new questions formulated by the panel director are posed to the panel. Panel members then return the answers to these questions, along with any revisions to their previous answers, to the panel director. It is in this questionnaire that they

are able to explain the reasoning behind their responses. The panel director once again processes this information and prepares the third questionnaire.

The third and all subsequent questionnaires contain three major parts. First, they include the answers to all previous questions, along with some statistical data so experts can view how their responses related to those of other panel members. Second, they include comments and reasoning that panel members included with their answers. Third, they provide an opportunity for experts to review and revise any of their previous answers. Once again, panel members fill out the questionnaire and return it to the panel director.

5. Interpret results

This process continues until a consensus is reached by the group. Usually a minimum of three questionnaires is needed to reach a consensus, but the number of questionnaires could be five or more. A key ingredient to this process is the anonymity of the panel members. No member knows the identity of the other panel members. This allows a true consensus to be reached and eliminates many problems that arise from bias and peer influence among the participants.

Practical application

As stated previously, the Delphi Method was created and first applied in the early 50s when the United States Air Force wanted to prepare for the possibility of an atomic war with the Soviet Union. The goal was to project how many atomic bombs that the Soviet Union would deploy in the event of war. The results from the first round of expert responses showed estimates ranging from 50 to 5000 bombs. After proceeding through four more iterations of the survey and response process, that estimate reached a consensus: 167 to 360 bombs. Using the repeated-ranking process of the Delphi methodology, a professional and focused prediction was obtained.

Other examples

Other examples where the Delphi method has been used include the forecasting of the long-term impact of modern terrorism on U.S. Society, the effectiveness of an AIDS vaccination in Switzerland, predicting the use and extent of information technology, and projecting how future events will affect the U.S. lodging industry. In each example, the long-term effects of a newly-introduced idea is desired, but not obtainable by quantitative means.

The Delphi Method is a qualitative method used for forecasting in situations in which historical data are unavailable or which explore far into the future. The Delphi Methodology is carried out by identifying the problem, selecting a panel of experts to consult, administering various iterations of the questionnaire and evaluation process, and drawing conclusions based on the experts' consensus. Using this methodology under the appropriate circumstances will give reliable and professional guidance to many of the questions that businesses face today.

*More
Resources*

The Delphi Method is used in many modern studies and various valuable explanations and examples are available for study and review. Below are a few excellent sources:

Dalkey, N.C. & Helmer, O. (1963, April). An experimental application of the Delphi method to the user of experts. *Management science*, 9, 3, pp. 458-67.

Dalkey, N.C.; Rourke, D.L.; Lewis, R.; Snyder, D. (1972). *Studies in the quality of life*. Lexington, Massachusetts: Lexington Books.

Helmer, Olaf. (1966, April). *The Delphi Method for Systematizing Judgments About the Future*. Insitute of Government and Public Affairs, University of California, Los Angeles.

Ludwig, Barbara. Oct. 1997. "Predicting the Future: Have you considered using the Delphi Methodology?" *Journal of Extension*. <http://www.joe.org/joe/1997october/tt2.html>

Okoli, C.; S.D. Pawlowski: The Delphi method as a research tool: an example, design considerations and applications. *Information & Management* 42 (2004) 15-29. www.elsevier.com/locate/dsw