Chapter 11
The Delphi Technique:
Use, Considerations, and Applications in the Conventional, Policy, and On-Line Environments

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ABSTRACT

The Delphi research and investigation technique utilizes experts in any given field to generate information in greater abundance and specificity than what is currently known or available. The conventional and more widely used Delphi process strives for consensus so that target issues can be more fully investigated based on the feedback of the people who are most knowledgeable and involved. Policy Delphi differs in that it does not seek consensus but rather is meant to generate the strongest possible opposing viewpoints on an issue so that policy makers can consider divergent and opposing perspectives. Multiple iterations or rounds of data collection are the most unique aspect of both processes which allows the quality and relevance of the information concerning the target issue to become more precise and well defined. "Real-time or e-Dephi" uses the modern era of computers, electronic devices, and web-based communication to achieve the critical and unique group communication process utilized in a Delphi investigation.

INTRODUCTION

Delphi...operates on the principle that several heads are better than one in making subjective conjectures about the future, and that experts ... will make conjectures based upon rational judgment and shared information rather than merely guessing and will separate hope from likelihood in the process (Weaver, 1971, p. 269).

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Originated in the early 1950s and primarily developed by Dalkey and Helmer at the Rand Corporation (Ludwig, 1997), the Delphi technique

is a group communication process that solicits experts' opinions in order to specifically examine a particular issue or topic. The original source for the name of Delphi comes from the oracle at Delphi where the spirit of the Greek god Phoebus Apollo was asked for advice on critical issues associated with politics and questions of the unknown and social dilemmas. As the name indicated, the Delphi is initially designed as a method of predicting future events. The earliest application of the technique was for military purposes. Its first notable use was during the "Cold War" period involving a project funded by the U.S. Air Force. A group of experts was gathered to explore the possible bombing strategies from the viewpoints of Soviet strategic planners (Rowe & Wright, 1999; Novakowski & Wellar, 2008). The Delphi process was employed to generate and refine the list of strategies, probabilities, and consequences as perceived by the Soviet planners.

The Delphi technique gradually became popular in the early 1960s and was applied in various fields. For example, policy determination (Wilenius & Tirkkonen, 1997; Hahn & Rayens, 1999; Syed, Hjarone, & Aro, 2009), curriculum development (Reeves & Jauch, 1978; Stritter, Tresolini, & Reeb, 1994), resource utilization (Anderson & Schneider, 1993; Tsaur, Lin, & Lin, 2006), needs assessment (Brooks, 1979; Olshfski & Joseph, 1991; McGeary, 2009), business management (Mitchell, 1991; Grisham, 2009), nursing (Duffield, 1993; Gibson, 1998; Keeney, Hasson, & McKenna, 2001), environmental management (Green, Hunter, & Moore, 1989, 1990; Stubbles, 1992), and education in general (Wicklein, 1993; Tigelaar, Dolmans, Wolfhagen, & van Der Vleuten, 2004; Stitt-Gohdes & Crews, 2004; O'Neill, Scott, & Conboy 2009) were explored using the Delphi process to collect data concerning issues related to their respective disciplines. The popularity of the Delphi technique began to fade in the mid 1970s (Yousuf, 2007) but at present it is not uncommon that the Delphi technique is used as a part or as the exclusive method of investigation in an evaluation or a research project.

The philosophical base of the Delphi technique is built on the Lockean idea that stresses the importance of human experience and agreement (Mitroff & Turoff, 1975; Powell, 2003). Therefore, the rationale of Delphi relies upon two presumptions. Foremost and simply stated, more minds are superior to one. More specifically, collective inputs should be better than individual judgments alone (Weaver, 1971; Dalkey, 1972). Second, ideas or comments produced by experts are based on their logical reasoning. The results generated by such reasoning are better than simple conjectures (Weaver, 1971). In essence, the Delphi technique involves a panel of experts in thorough examinations of a specific area of concern. The purposes of using Delphi can be benchmarking, policy investigation, and prediction of future events. In common survey practices, investigators attempt to identify "what is," but the Delphi is an effort to assess "what should/could be" (Miller, 2006; Hsu & Sandford, 2007a).

The purposes of this chapter are to describe the characteristics of the Delphi, to illustrate the Delphi process, to address strengths and limitations of the technique, to discuss different forms of the technique, to discuss its application in an online research environment, and to compare the electronic application with its paper-based counterparts. Following the discussion of the electronic application of the Delphi and policy Delphi, some examples are provided to help illustrate the research applications.

DISTINCT FEATURES OF THE DELPHI

The Delphi technique is characterized as a means of building consensus through the use of a series of questionnaires (Dalkey & Helmer, 1963; Dalkey, 1969; Linstone & Turoff, 1975; Lindeman, 1981; Young & Jamieson, 2001). As such, deploying