



# Assessing Delphi panel composition for strategic foresight – A comparison of panels based on company-internal and external participants



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## ABSTRACT

Decision makers seek advice from others in order to make more accurate decisions, justify these decisions, and share responsibility. The Delphi survey technique finds broad acceptance as a decision support and forecasting tool. Recent research has discussed the composition of Delphi panels and whether company internal or external panelists should be consulted for strategic foresight. We make a contribution to this discussion by investigating whether internal and external participants of Delphi studies lead to differing results and how the differences can be utilized by decision makers. We consider differences that might be inherent not only to quantitative but also to qualitative Delphi data. Results of our research reveal that there are several significant differences between the two panels' evaluations, which lead to varying consultation practices for different strategic purposes.

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## 1. Introduction

When managers evaluate long-term strategic choices for their firms, the possible development of various issues related to the company and its environment have to be considered, such as changing customer demand, technological processes, or demographic change. In such contexts, uncertainty is often high. Furthermore, developments outside the company's focus might influence the business area [1]. That is why in situations of perceived environmental uncertainty, decision makers frequently consult other knowledgeable persons to increase decision accuracy, justify their decisions, and spread the responsibility [2–4]. The higher the uncertainty of a future development and the more events can affect the outcome of an event, the more the evaluations regarding the event will differ and the opinions of the individuals will diverge [5]. An instrument to provide decision makers with orientation is the Delphi method [6]. It is particularly applied in judgmental forecasting and corporate foresight where companies strive to generate forecasts about relevant issues in order to establish a more profound basis for

strategic decisions [7]. The Delphi method is sometimes referred to as a crowdsourcing technique [8]. However, in contrast to most other crowdsourcing techniques, such as prediction markets [9], which aim at surveying a great number of people including laypersons, the Delphi survey method aims at surveying a limited group of knowledgeable people from a certain field [10,11].

While the Delphi method has proven its validity in many research and business contexts [12,13], the appropriate panel composition remains a controversial issue for critical reflection [14,15]. In our research, we focus on what types of experts should participate in a Delphi survey, and thereby provide strategists with advice, in order to orient decisions to a particular business context. In general, previous literature has distinguished between internal advice, or guidance from persons within the same company, and external advice, or assistance from persons outside the company [16].

In addition to this issue, research has shown that a lack of diversity among the participants in a Delphi panel could induce biased results (e.g. [14,17,18]).<sup>1</sup> More precisely, in

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<sup>1</sup> For the scope of this paper, we use the terms diversity and heterogeneity as synonyms.

heterogeneous panels, in which panelists are likely to have contradictory opinions, for instance concerning desirability, some individuals provide evaluations that are above the real value of estimation, while others make judgments in the opposite direction below the real value. Therefore, the estimations “bracket” the real value: averaging the values of the estimations leads to a value closer to the real value. Such bracketing diminishes errors [19,20]. In homogeneous panels, participants are likely to have similar opinions and therefore biases. Their evaluations are either above or below the mean, and do not bracket the real value.

The dimensions of heterogeneity for the purposes of a Delphi survey are manifold. For instance, individuals can differ in their age, gender, cultural and educational background, knowledge base, profession, values, attitudes, or tenure [21–23]. In our research, we particularly focus on the diversity that arises from selecting participants from different companies, where individuals work in diverse fields and perform differing tasks, resulting in professional background and knowledge base heterogeneity [24–26]. We explicitly do not consider the degree of diversity within one company to result from the versatility of tasks that the employees perform.

We conducted two separate Delphi surveys on an identical set of projections. The thematic scope of our studies was the European logistics service industry concerning possible future developments, such as collaborations, technological advancements, innovations, and customer expectations. The projections were quantitatively assessed along three dimensions: probability of occurrence, likely impact on the industry, and desirability. Moreover, optional written arguments of qualitative justification could be provided.

Managers from one large international company composed the internal panel. Whereas experts from different companies offering the same services as the reference company of the internal panel, as well as the two primary stakeholder groups “customer companies” and “suppliers”, and panelists from academia comprised the external panel. Therefore, the two Delphi panels had different levels of heterogeneity with respect to their professional backgrounds.

Our aim was to substantiate recommendations for conducting internal or external Delphi surveys when the results are used for strategic foresight and decision making. Therefore, we formulated the research questions: *Do company-internal Delphi panels and external Delphi panels lead to differing quantitative and qualitative results? If so, how do they differ? Which panel should be consulted for which foresight activity?*

In the remainder of the paper, we review current literature on both advice taking and diversity in group decision making processes, explain the two Delphi surveys conducted in more detail, illustrate the data analysis of quantitative and qualitative data, and discuss the significance of the results in the context of the previously reviewed literature. We conclude with recommendations for selecting Delphi panel participants for different purposes, point out limitations that are inherent to our research, and indicate possible future research directions.

## 2. Theory and proposition development

The rationality in decision making is bounded because the information available is limited and asymmetries in information might exist [27]. We aim to provide recommendations

for decision makers, as to whether they should consult internal or external sources for guidance in Delphi surveys. Power and social identity theories have demonstrated that decision makers prefer either one or the other type of advice [28,29]. According to previous literature, various pros and cons exist for the two sources of information, as depicted in Table 1.

The choice between internal and external advisors becomes relevant when a Delphi panel should be recruited for a survey to support decision making. Many researchers argue that the panel of a Delphi survey should be composed of participants with great expertise in order to achieve accurate forecasts [36,37]. However, social psychology has demonstrated that expertise itself may not be sufficient to obtain accurate judgment but should be combined with diversity [21,38]. Diversity in a panel proves to be beneficial for obtaining useful results in several ways: the advice comes from multiple independent sources; the panelists have different skills and points of view. The definition of diversity, or heterogeneity, usually involves demographic characteristics as well as aspects related to the individuals' professional experience [21–23].

The fact that heterogeneity and its benefits are also important for Delphi studies has already been outlined by several researchers [14,18,21,39,40]. Heterogeneous Delphi panels ensure a reduction in polarization [21] and desirability bias [18], and enable bracketing. The latter is especially useful for Delphi studies as the feedback which the participants receive includes average values [41], a reasonable way to consider multiple sources of information when probability forecasts are made [19,42]. Such average values become more accurate through bracketing.

Since the results of a Delphi study are frequently used for advice in the strategic decision process, the exchange of diverse perspectives is important. Previous literature highlights that although taking advice increases the decision accuracy in general [43,44], when the advice comes from multiple sources, this effect is even greater. Therefore, many scholars recommend using multiple independent sources [19,42,45]. Moreover, more detailed information, such as the reasons for a certain evaluation, especially if it provides ambivalent perspectives, further improves the accuracy of judgments. From the authors' perspective, these elements are also core characteristics of the Delphi technique.

In Delphi panels, the composition can be varied by the scope and degree of heterogeneity in professional background, among others. The panel can either have an internal or external scope and the companies from which the panel is composed of can either be specialized in one operational area or have multiple operational foci. We developed a framework for the differentiation of heterogeneity in Delphi panels. For our purposes, heterogeneity is judged by professional background and the knowledge base that can be associated with the company's field of operation. Thus, we narrow our research to these two dimensions for the purpose of clarity and conciseness. Further dimensions that induce heterogeneity, such as age, tenure, or education, are excluded and beyond the scope of this research. The potential combinations of scope and field of operation are represented in Fig. 1.

We conducted two Delphi surveys in the European logistics service industry: one survey included an internal panel solely consisting of managers from one large international company, a highly specialized logistics service provider

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