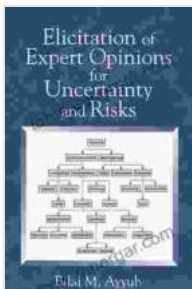


# Elicitation of Expert Opinions for Uncertainty and Risks: A Comprehensive Guide

Expert opinions play a crucial role in decision-making under uncertainty and risk. Experts possess specialized knowledge and experience that can inform decisions in a wide range of fields, including engineering, medicine, finance, and policymaking. However, eliciting expert opinions effectively can be challenging, as experts may have different perspectives, biases, and levels of expertise.



## Elicitation of Expert Opinions for Uncertainty and Risks

by Bilal M. Ayyub

★★★★★ 5 out of 5

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This article provides a comprehensive overview of the methods and techniques used for the elicitation of expert opinions, considering both qualitative and quantitative approaches. It discusses the advantages and disadvantages of each method, as well as the factors that influence the quality and reliability of elicited opinions.

### Qualitative Methods

Qualitative methods involve gathering and analyzing expert opinions in a non-numerical format. These methods are often used when the issue under consideration is complex or ill-defined, and when it is difficult to quantify the uncertainty or risk involved.

- **Interviews:** Interviews are a flexible and versatile method for eliciting expert opinions. They can be conducted in person, over the phone, or via video conferencing. Interviews allow the interviewer to ask open-ended questions and probe for more detailed information.
- **Focus groups:** Focus groups involve bringing together a small group of experts to discuss a specific topic. The group discussion is facilitated by a moderator who encourages participants to share their perspectives and insights. Focus groups can be useful for generating new ideas and identifying common themes.
- **Delphi method:** The Delphi method is a structured process for eliciting and refining expert opinions. It involves multiple rounds of questionnaires, with feedback from previous rounds used to inform subsequent rounds. The Delphi method can help to reduce the influence of group dynamics and biases.

## **Quantitative Methods**

Quantitative methods involve gathering and analyzing expert opinions in a numerical format. These methods are often used when it is possible to quantify the uncertainty or risk involved, and when it is desirable to produce a more objective assessment.

- **Probability distributions:** Experts can be asked to specify probability distributions for uncertain quantities. These distributions can be used

to represent the expert's beliefs about the likelihood of different outcomes.

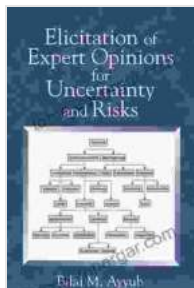
- **Bayesian networks:** Bayesian networks are graphical models that represent the relationships between uncertain variables. Experts can be asked to specify the conditional probabilities of these variables, which can then be used to calculate the probability of different outcomes.
- **Fuzzy logic:** Fuzzy logic is a mathematical framework for representing and reasoning with uncertain information. Experts can be asked to specify fuzzy sets to represent their beliefs about uncertain quantities.

## **Factors Influencing the Quality of Elicitation**

The quality of elicited expert opinions depends on a number of factors, including:

- **Expert selection:** It is important to select experts who have the relevant knowledge and experience to provide informed opinions.
- **Elicitation method:** The choice of elicitation method should be based on the nature of the issue under consideration and the desired level of precision.
- **Bias:** Experts may have biases that can influence their opinions. It is important to be aware of these biases and to take steps to mitigate their effects.
- **Uncertainty:** Experts may be uncertain about their opinions. It is important to elicit and quantify this uncertainty in Free Download to make informed decisions.

Elicitation of expert opinions is a valuable tool for decision-making under uncertainty and risk. By carefully selecting experts, choosing the appropriate elicitation method, and mitigating biases, it is possible to obtain high-quality expert opinions that can inform and improve decision-making.



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