

# An Application of Fuzzy Delphi Technique to Measure Experts Consensus on Communication Skills Among Engineering Graduates

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## Abstract

Delphi method is a technique and structured approach used to review and collect opinions of a group of experts, however, has its own weaknesses. The *Fuzzy Delphi Method* (FDM), derived from a modifications of Delphi method, considered by many researches as more superior in providing evidence of human linguistic (which is the signature of Delphi Technique). In this paper, *Fuzzy Delphi Method* was used to assess the content of communication skills among engineering graduates. This development phase is a part of a project to develop an engineering employability skill framework in Malaysia. This phase involves the view of 10 experts who are experienced and have deep knowledge in engineering. It is a rigorous statistical analysis to validate the validity of abstract concept of the communication skills. The paper presented the result of the experts' view and the appropriateness of *Fuzzy Delphi Method* as an important tool to provide information about the validity of communication skills content. Experts' perceptions have shown incongruity with respect to speak and understand more than one language among engineers. The experts agreed with engineering graduates might be give a clear direction, listen and ask question in their employability skills proficiency.

Keywords: *Fuzzy Delphi Method, Validation, Communication Skills, Engineering Employability*

## Introduction

The Fuzzy Delphi method was proposed by Murray (Murray et al., 1985) with the idea of combining the traditional Delphi method and Fuzzy Set theory. The standard Delphi method developed by Dalkey and Helmer (1963) was the most relied upon methodology used to find answers within a set of questionnaires (Hwang & Lin, 1987; Reza & Vassilis, 1988). This method was based on the use of linguistic terms. However, because of the potential for misunderstandings between the meanings of the answers taken from the questionnaires and the interpretation of these answers by experts, in many situations, this approach resulted in uncertainty and was not properly able to reflect quantitative terms. Experts attempted to address this „fuzziness“ in terms of understanding the outputs of the Delphi method using the Fuzzy Set theory (Zaini et al., 2019). The Fuzzy Set theory is an approach that can resemble human reasoning in its use of approximate information and uncertainty to generate decisions. It was specifically designed to mathematically represent uncertainty and vagueness and provide formalized tools for dealing with the imprecision intrinsic to many problems (Kahraman et al., 2004; Williams, 2003; Zadeh, 1965). In this analysis, the efficiency of interpreting questionnaire results could be much improved through objective evaluation of the factors that the Fuzzy Set theory proposes. To improve the weaknesses