

A BRIEF LITERATURE REVIEW FOR FUZZY AHP

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AHP is an effective tool for dealing with complex hierarchical decision making problems. It divides a large complex problem into small and easily solvable sub-problems and then combines the solutions of these small problems in order to obtain the solution of the larger problem. Consistency measurement of the pairwise comparison matrices is another useful component of AHP. It uses a 1 to 9 scale whose linguistic expressions are defined accordingly. However, the representation of a linguistic term by an exact number may not fully reflect a decision maker's judgments in his/her mind. Fuzzy numbers and scales have been developed to consider this issue in the literature. After ordinary fuzzy sets have been extended to new fuzzy types of sets such as type-2 fuzzy sets, intuitionistic fuzzy sets, hesitant fuzzy sets, Pythagorean fuzzy sets, and neutrosophic sets, new extensions of fuzzy AHP have been proposed by various authors accordingly. A brief literature review on fuzzy AHP studies is given.

The Scopus database was utilized for this literature review. When the term "Fuzzy AHP" was searched in article title, abstract, and keywords, 2,066 documents were found. Figure 1 illustrates the number of documents by their publication years. After 2003, the number of documents on fuzzy AHP sharply increases. Figure 2 presents the countries publishing fuzzy AHP papers and the numbers of publications. China, Iran, Turkey, India, and Taiwan are the five leading countries in this area. Figure 3 shows the types of documents written about fuzzy AHP. Articles on fuzzy AHP and conference papers are by far the leading types of documents written about fuzzy AHP. Figure 4 presents the classification of fuzzy AHP documents by their subject areas. Engineering and computing sciences are the leading subject areas followed by business, management and account, mathematics, and decision sciences.

In the special topic articles section, three papers on the theoretical development and/or practical usage of fuzzy AHP are presented. I hope these papers will provide a useful resource of ideas, techniques, and methods for research on fuzzy AHP.

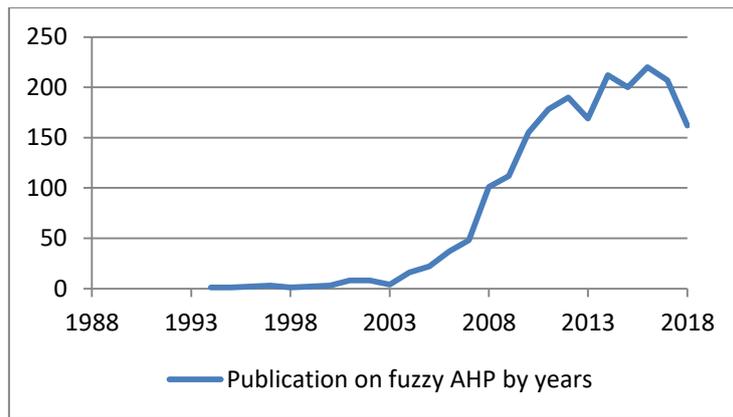


Figure 1 Number of publications on fuzzy AHP by their year

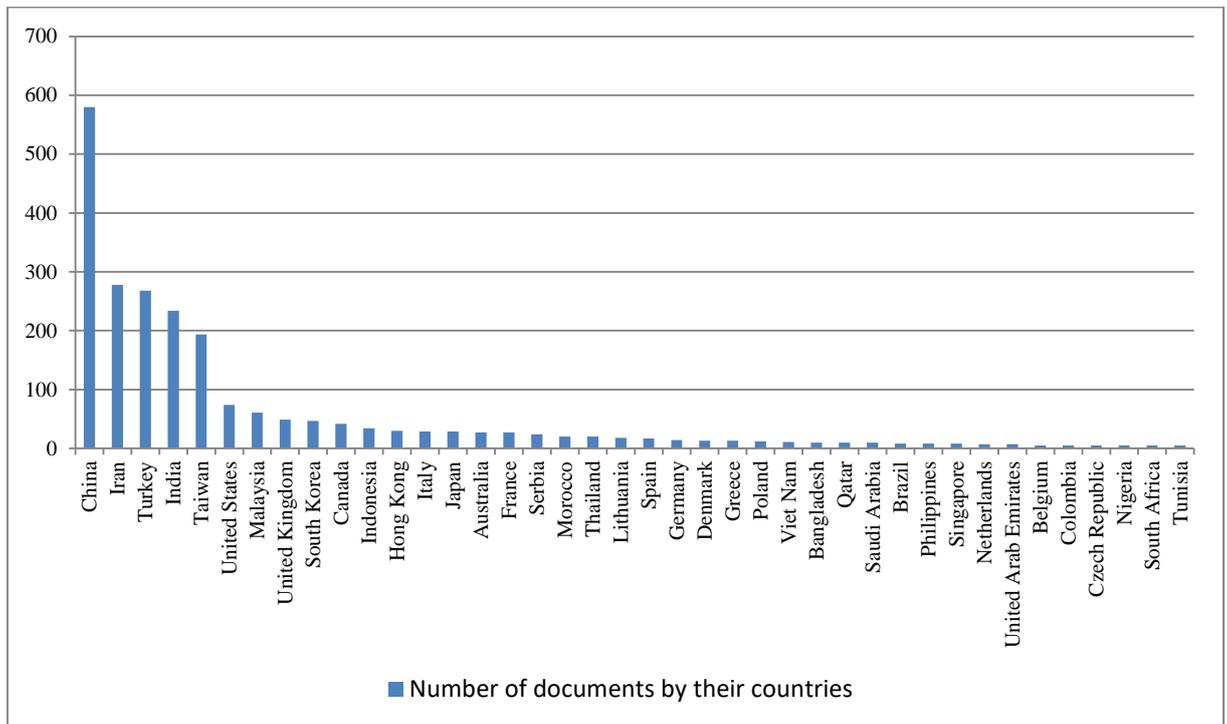


Figure 2 Countries publishing fuzzy AHP papers

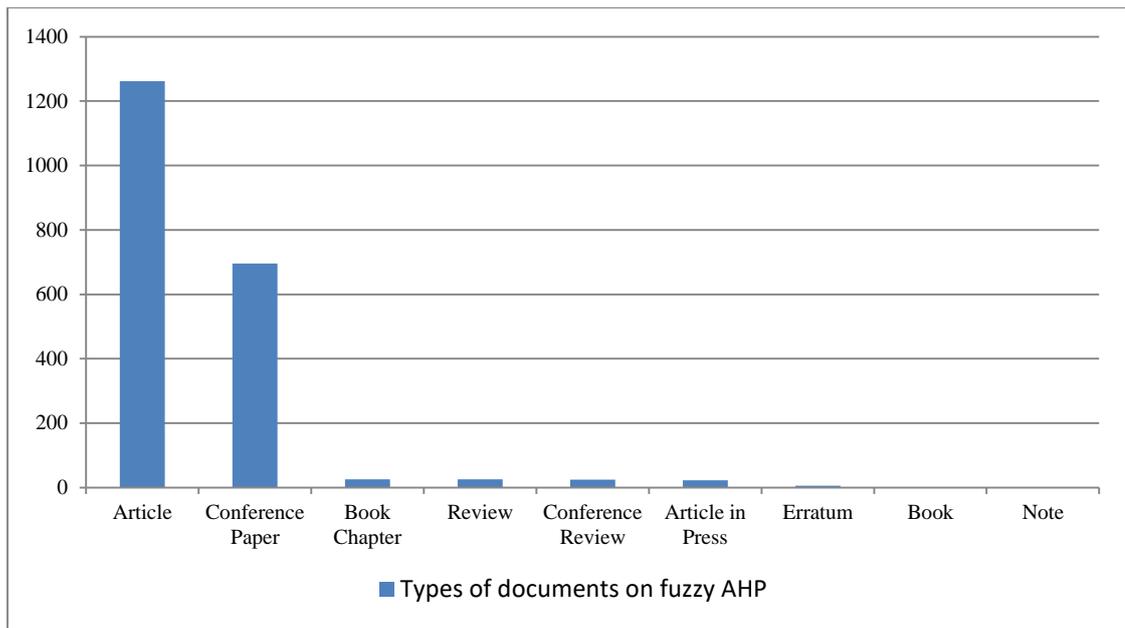


Figure 3 Types of documents on fuzzy AHP

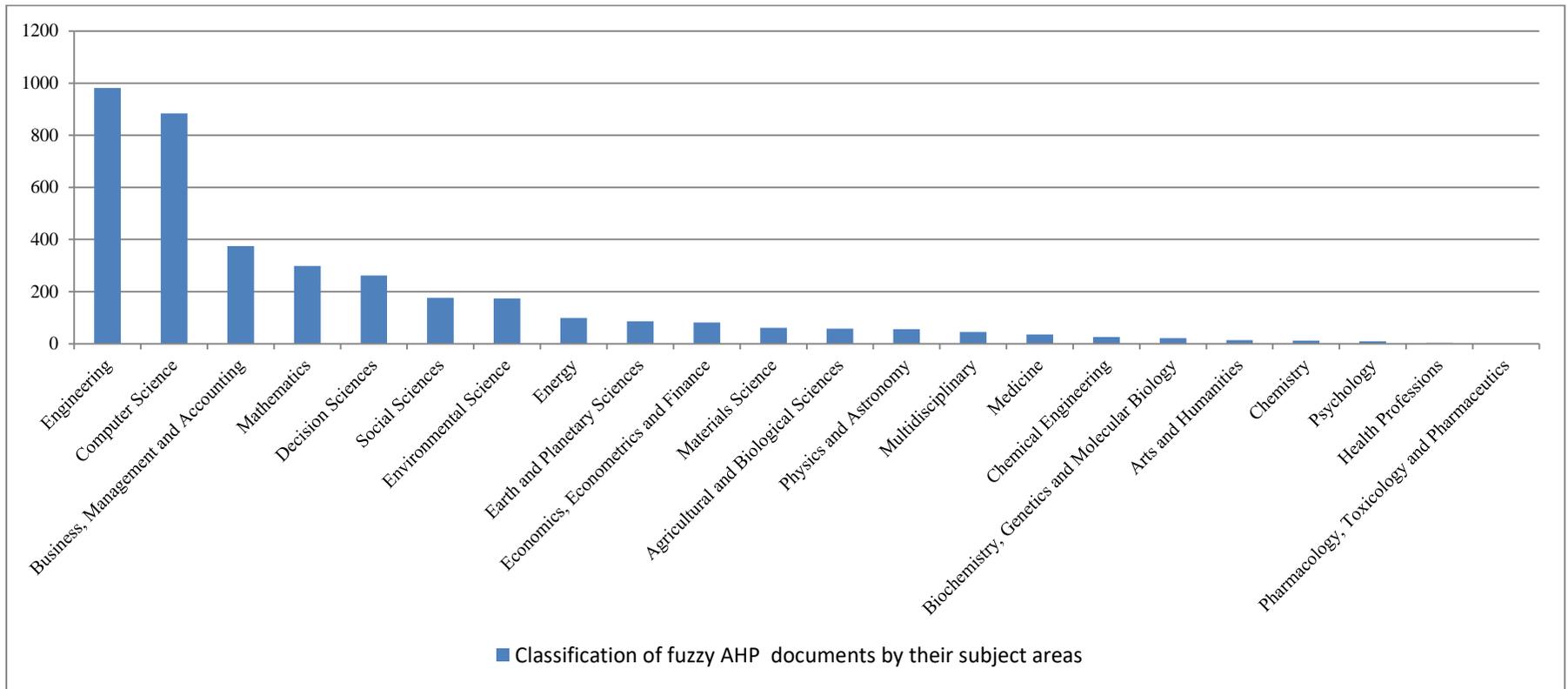


Figure 4 Classification of fuzzy AHP documents by their subject areas

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