Application of a Fuzzy Inference System to Patent Strategy Analysis of Fall Protection Technology

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Abstract

This paper describes a method that integrates a fuzzy inference system (FIS) and patent analysis information for technological strategy planning of personal fall protection equipment. The proposed patent analysis based fuzzy inference system (PABFIS) adopts fuzzy IF-THEN rules for strategy planning, which is useful for construction technological managers in planning appropriate strategies for technology research and development. The critical attributes for inputs of the FIS including Patent Quantity (PQ), Revealed Patent Advantage (RPA), Patent Activity (PA), Be Cited Rate (BCR), and Relative Citing Index (RCI) are collected and calculated from computer aided patent analysis systems. Qualitative fuzzy decision rules are collected and summarized from literature. Parameters of membership functions associated with fuzzy terms of the IF-THEN rules are automatically constructed using Kohonen learning algorithm based on the attribute values of the firms within the target group identified by a Multi-Dimensional Scaling (MDS) method. The most appropriate technology strategies are inferred and suggested by the PABFIS based on the input attribute values from patent analyses. A case study on fall protection technology is conducted. The Taiwan (TIPO) and US (USPTO) patent databases are selected for case study to demonstrate the proposed method.

Keyword：Technological strategy, patent analysis, fuzzy inference system, fall protection technology.