Abstract

House hunting meaning the activity of trying to find a house to live in, is considered as one of the most important activities for many families worldwide. This involves many criterions/factors to be measured and evaluated. These factors are expressed both in quantitative and qualitative ways. In addition, a hierarchical relationship exists among the factors. Moreover, it is difficult to measure qualitative factors in an objective/quantitative way, resulting incompleteness in data and hence, uncertainty. Therefore, it is necessary to address the issue of uncertainty by using appropriate methodology; otherwise, the decision to select a house to live in will become inappropriate. There exist many methods such as Analytical Hierarchical Process (AHP), Analytical Network Process (ANP), Inner Product Vector (IPV) to address the issue presented in this paper. However, none of them is able to address the issue of uncertainty and hence, resulting inappropriate selection of a house to live in. Therefore, this paper demonstrates the application of a novel method named Evidential Reasoning (ER), which is capable of addressing the uncertainty of multi-criterion problem, where there exist factors of both subjective and quantitative nature. The ER approach handles uncertainties by using a belief structure, the evidential reasoning approach used in aggregating degrees of belief from lower level attributes to higher level attributes [7]. This paper reports the development of DSS using ER approach, which is capable of providing overall assessment on the location of a house to
live in taking account of both qualitative and quantitative factors. Chittagong, which is the second largest city of Bangladesh has been considered as the case study area to demonstrate the application of the developed DSS.

References

An Evidential Reasoning-based Decision Support System to Support House Hunting

- Kari Sentz and Scott Ferson (2002); Combination of Evidence in Dempster–Shafer Theory, Sandia National Laboratories SAND 2002-0835

- List of cities and towns in Bangladesh, Retrieved December 29, 2009

Index Terms

Computer Science Decision Support
Keywords
Multiple criteria decision analysis (MCDA)  uncertainty  evidential reasoning (ER)
Analytical hierarchy process (AHP)

Decision support system (DSS)