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Ranking the Sustainability Levels of Rural Areas Based on Vikor Model
Case Study: the Villages of Fasa County – Fars Province

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Introduction

Sustainable development together with its complicated principles, have been globally discussed for years. The development process which started from1940, has reached to a dead end, therefore from 1980s environmental issues and development have been under a new perspective and special attention has been paid to them. This was the basis for sustainable theories. Acceptance of the definition for sustainable development from the viewpoint of UN Commissioning which a development is regarded sustainable if it enables to meet the present generation demands without neglecting the future potential for meeting the future generation demands, for the difficulty of determining the future generation needs and demands is faced with some problems. Meanwhile, concerning the sustainability measurement, there are no specific and fixed matrixes which enable us to predict them based on them the present and future condition. In most cases, based on the variable conditions of different countries and different historical eras, special matrixes have been used for measuring sustainability both at local and national level. However, since the late of 1990s , a kind of convergence has been formed for better recognition of different aspects and dimensions of sustainable development and since then the economical, social, political and environmental aspects, have been considered and regarded simultaneously in sustainability studies. The aim of the present study is identifying and designing the analysis process for multi-criteria decision making network in measurement of sustainable development and defining the links between the active and effective factors in this regard, these all have been attained through a careful study of the properties and characteristics, elements and of sustainable development indices in a rural district located in Fasa town ship area of Fars province by the use of Multi-criteria Decision Making Models (MCDM) and Analysis Network Process(ANP) and also the use of Vikor model . With respect to the main purpose of the present study i.e. the use of a proper model for ranking sustainability levels of rural areas, in this paper, with emphasis on sustainable development approach, Vikore model has been used for measuring the sustainability level of economical, social and environmental dimensions of Fasa town ship. For this purpose, firstly the frame work for organizing sustainable indices was presented and then through a brief introduction of the methods and models of measurement, based on the considered aims of the study, the characteristics and features of some of them are presented.

Then by implementing the obtained results, the level of sustainable development is measured through paired comparison in Super Decision software and using Vikor model.

Research Methodology

The method used in this research is a combination of analytical and descriptive methods by using library and field systems. The rural analytical unit is comprised of rural households and experts, that by using Network Analysis Method and Borda technique, the data obtained from collecting the related questionnaires were processed by SPSS and Super decision Software. For sampling, class sampling method was used, in this method, in addition of the population criterion geographical dispersion of rural districts has also been considered. In this sampling method, firstly, specific codes were assigned to the rural households residing at each district. This process has been performed for all households residing at the selected districts. At the next stage, from each district, based on the required samples, the codes' number was selected randomly. Then by referring to rural health care centers, with respect to the existing files of the rural households, the required numbers of samples were selected and finally the questionnaires were filled by snowball method.

Discussion and Results

The results of using Vikor method reveals that this method as a multi- variable decision making method has some advantages, including multi- characteristics optimum theory or non- ranking methods.On such a basis and following calculating the weights by Using Network Analysis Technique and benefiting from Vikor model, the difference of sustainability rate in economical, social and environmental dimensions of rural districts of this township will be determined.

Based on the performed calculations, in which S is the distance of I than the ideal solution (the best composition) and R is the distance of alternative from negative alternative solution (the worst composition) and when V>0.5, then Qi index has maximum agreement. when V<0.5 indicates maximum negative agreement, in total if V=0.5 it means equal group agreement. Ranking results shows that Jarghe village of Sheshdeh and Gare balagh based on the related indices with R=0.0764 , S=0.292and Q=1 has the highest level of sustainability and Novbandan village with R=0.220, S=0.098 and Q=46 has dedicated itself the lowest level of sustainability and other villages are placed between these levels.

Conclusion

Also the overall results indicate that Vikor method for solving the dispersive decision issues based on selecting the best alternative among the existing ones, according to ranking system, has a high capability. Regarding the actions, reactions, and interactions and the interlinks among different criteria and matrixes in different dimensions ,for accurate assessment of sustainability, paying attention to different groups and dimensions of sustainability independent from each other and also using the public and professional views is necessary. In this case, the group decision making method by using Vikor method and questionnaire together with combining the obtained data in ANP model has a high efficiency.

Keywords: Sustainable Development, Ranking of Sustainability, Vikor Model, Rural Areas, Fasa County.

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