Measuring of Agricultural Development Levels in Villages of Qaratureh Dehestan Using TOPSIS Technique

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Extended Abstract

1. INTRODUCTION
In order to evaluate the agricultural development and to rate the villages of Qaratureh district and to explain the existing inequalities using TOPSIS multi-criteria decision-making method and 47 criteria, the findings revealed that among 27 villages, Goltappe Sofla ranks in the first place and MoradGholi village is placed at the bottom. In fact, among the factors that made Goltappe Sofla rank higher than others was the existence of water resources, which is much higher compared to other villages. The findings of the TOPSIS revealed that the villages of the district, with regards to the development coefficient (Ci+) can be categorized into three levels: developed, developing and less-developed (deprived). In terms of criteria for agricultural development, three villages were categorized as the most developed, 11 as developing and 13 as less-developed (deprived) which is a testament to the fact that disparities and inequalities exist. Moreover, in order to pinpoint the inequalities in various aspects of rural development, the dispersion coefficient of each district was calculated. The findings show that the highest amount of inequality among villages is related to water resources and irrigation together with animal husbandry, respectively. In this respect, investment priorities should be allocated to developing water resources and increasing the capacity of animal husbandry in the region.

2. THEORETICAL FRAMEWORK
During the past decade, agricultural development has been considered as one of the main objectives of development policies in many countries. Development policies, such as agricultural development, specifically in developing countries, are considered as the center of development projects. Considering the fact that agricultural development is a highway for improving the quality of rural life, welfare, food security and etc., balancing them with respect to levels of agricultural development necessitates categorizing and rating of districts. There are various ways for determining the rating of a district’s agricultural development, such as Morris method, TOPSIS, factor analysis, the coefficient of variation and numerical taxonomy. Familiarity with various decision-making methods and utilizing them in actual decision making can be very practical. Considering the nature, criteria and conditions that can affect decision making, in common methods, such techniques are categorized in a general way. In the present research, among multi-attribute models for complex decision making and multi-criteria models for selecting the preferred method, the technique for order of preference by similarity to ideal solution (TOPSIS) has been utilized.

3. METHODOLOGY
The present research is a cross-sectional, quantitative-functional one. With regards to the objectives of the study, descriptive-analytical method, incorporating surveys, has been used. The population of the research consisted of all the farmers in all the villages of Qaratureh district, amounting to 2800 people. From among the 2800 operating farmers in the selected rural areas, according to Morgan table, a sample size of 338 people tantamount to the number of farmers in each of the rural areas was chosen. All the villages in the area under study were chosen using census.In the next phase, samples were selected through stratified sampling, with proportional sample allocation. For the field study section of the research, the most appropriate means of collecting the data was deemed to be a questionnaire and two questionnaires, a village questionnaire and a farmer questionnaire, were designed based on
library research and the theoretical framework of the study. In order to measure the levels of agricultural development in the villages of Qaratureh district, indexing was used. To this end, 47 criteria in 5 groups were collected. In order to evaluate the importance of each index, their weight was determined using Shannon entropy. A comparative analysis was done using Morris model. In the end, dispersion coefficient was used for presenting regional inequalities in various agricultural sectors. Excel and SPSS were also utilized for indexing and calculations.

4. DISCUSSION

In order to evaluate the agricultural development and to rate the villages of Qaratureh district and to explain the existing inequalities using TOPSIS multi-criteria decision-making method and 47 criteria, the findings revealed that among 27 villages, GolTappe Sofla hold the 1st rank and MoradGholi village is placed at the bottom. In fact, among the factors that made GolTappe Sofla rank higher than others was the existence of water resources, which is much higher compared to other villages. The findings of the TOPSIS revealed that the villages of the district, with regards to the development coefficient (\(C_i^d\)) can be categorized into three levels: developed, developing and less-developed (deprived). In terms of criteria for agricultural development, three villages were categorized as the most developed, 11 as developing and 13 as less-developed (deprived) which is a testament to the fact that disparities and inequalities exist. Moreover, in order to pinpoint the inequalities in various aspects of rural development, the dispersion coefficient of each district was calculated. The findings show that the highest amount of inequality among villages is related to water resources and irrigation together with animal husbandry, respectively. In this respect, investment priorities should be allocated to developing water resources and increasing the capacity of animal husbandry in the region.

5. CONCLUSION

Based on the findings of the research, we can say that the degree of the development in the villages of Qaratureh district, in terms of enjoyment of agricultural criteria, is not balanced. GolTappeh Sofla, Jafarabad and Gavshale were first, second and third, and Panje Sofla, Panje Olya, Aziz Abad and Moradgholi were at the bottom, respectively. Regardless of considerable homogeneity in terms of natural and geographical conditions, there is a noticeable difference in terms of levels of enjoyment of agricultural development among the villages which indicates the mismanagement of resources in this district. Geographical location, distance from the city (as a market) and the center for rural services affects the levels of agricultural development in villages. Development-based planning is required to improve the conditions of these areas. In addition, for the purpose of eliminating rural deprivation and thus for agricultural development, it is necessary that existing facilities and potentials be allocated in a way that less developed villages can benefit more. In this respect, the criteria which, in terms of development, are in a poor condition, such as water efficiency, workforce and land should gain more attention.

Key words: Agricultural development, inequality development, TOPSIS, Qaratureh Dehestan.

References (in Persian)

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