Abstract

Due to the restrictions of soil and water resources in the world, improving the performance of the irrigation and drainage networks is a basic requirement. According to international criteria one of the indices of agricultural development is constraction, modernization and rehabilitation of the irrigation and drainage networks. Evaluation of the existing irrigation systems has shown that the operations of such systems are lower than those expected because of defect in the design and implementation, lacke of proper maintance and poor managements. Considering that construction of the irrigation and drainage networks demands a huge invesment, the rehabilitation of such a systems is an appropriate way to increase the water and land efficiency. Unfortunately due to the lack of a system of evaluation in the irrigation networks, the effectiveness of rehabilitation activities carried out is unknown. In the other words, it is not clear how much the rehabilitation activities improve the network performance. Therefore, it is nessessary to evaluate the effectiveness of the rehabilitation considering the significant costs involved in such activities. For this purpose, the irrigation and drainage network of moghan plain is selected evaluate. In this study, the classical method is used. For each viewpoint a set of effective parameters, affecting the rehabilitation activities is introduced and a quantity is assign for either of them. Weight indexes and windows score using with analytical hierarchy process and ultimately assessment score of the average weight per windows and network is calculated. Based on their specifications rehabilitation projects are classified in the two groups, minor and major one. Among the 14 major rehabilitation projects under investigation the MC-I/12 piece has achived the highest effectiveness with the score 89.7% (good rating) and 93.7% (excellent rating) in the total and technical viewpoints, respectively. The MC-I/6 piece has achived the highest effectiveness with the score 88.5% (good rating) in the non- technical viewpoint. In general, for toal rehabilitation 7.1% of projects have very good effectiveness, 50% good and 42.9% moderate one. In technical viewpoint 28.6% of projects have very good effectiveness, 42.8% have good and 28.6% also have moderate. In the non-technical viewpoint 21.4% of the projects have good effectiveness, 64.3% have moderate and 14.3% also have the weak effectiveness. Finally, effectiveness of total rehabilitation is 82.31%, effectiveness of total rehabilitation in the technical viewpoint is 86.36% and effectiveness of total rehabilitation in the non-technical viewpoint is 73.34%. For increasing the effectiveness, it is suggested that the budget of the new project, the costs of equipment and construction material should be provide on time.

Keywords: Evaluation, Effectiveness, Rehabilitation Activities, Irrigation and Drainage Network, Moghan plain

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