Modeling the Impact of Infrastructure Factors Affecting Improvement of Agricultural Water Productivity in Iran

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Abstract

Infrastructure factors provide the main basis for agricultural production and activity under conditions of limited water resources and are considered as strategic requirement for improving this sector. The aim of this research was recognition, determination of importance and level of effectiveness, and investigating the relation of infrastructural components and indicators in improving agricultural water productivity. The method used for this research was field surveying type in which, after documentary and library studies, a self-made questionnaire was developed for interview with professionals and practitioners to gather their opinion on the importance level of different indicators using a Likert Scale, followed by analysis of questions and assumptions. The research indicated the relation and effectiveness level of variables by means of structural equation modeling and Smart PLS software. According to the obtained results, emphasis of infrastructures were on the side of agricultural water supply, while lack of demand oriented approach, process, systematic, and holistic view were among the main problems of the infrastructures. Also, components such as "downstream instrumentation of the fields and wells with water measurement devices and controlling irrigation water" and "share of downstream farms equipped with systems for lowering water consumption out of the total cultivated area" were among the most effective factors. It was shown that by taking other variables as constant, agricultural water infrastructures have been effective (about 87.6%) on improvement of agricultural water productivity, and there is a positive and meaningful relation between each one of the components and related indicators.

Keywords: Water productivity, Infrastructures, Modeling, Structural equation modeling