

# TECHNICAL EFFICIENCY AND ITS DETERMINANTS AMONG VEGETABLE FARMERS IN JAFFNA DISTRICT: AN APPLICATION OF DATA ENVELOPMENT ANALYSIS

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Among the vegetables, brinjal and tomato are the most important staple food for the people, and the majority of the farmers depend on its cultivation for their livelihood. Thus, increasing the production of these two vegetables through improving technical efficiency is an important goal of the agricultural sector. In this background, this study aims to estimate the technical efficiency in vegetable production and its determinants among the sample of vegetable farmers in Jaffna district. For this, the farmers cultivating brinjal and tomato were selected from two divisional secretaries, namely, Valikamam North and Valikamam South in the district. From each vegetable, forty farmers were selected randomly, and the data related to the amount of production and its inputs, such as size of land, costs of seed, fertilizer cost and costs of labor were collected through the questionnaire during the season 2022-2023. The non-parametric approach based on input-oriented data envelopment analysis was used to estimate the technical efficiency, while the Tobit regression model was used to analyze the determinants of technical efficiency in vegetable farming in the study. The estimated results of technical efficiency for brinjal and tomato were 37.6% and 48.2%, respectively, which revealed that average technical efficiency estimates were not at the potential level, and there is ample room for increased productivity through improving technical efficiency for both vegetables by 62.4% and 51.8% in the study. Results of the Tobit regression model revealed that family size, farming experience, type of land, whether tenant land or own and the availability of off-farm income significantly increased the technical efficiency of both brinjal and tomato production. To increase the brinjal and tomato yields, farmers should be encouraged to engage in off-farm income generating activities, which motivates them to increase their production effectively in the future.

**Keywords:** Input-oriented, Off-farm income, Potential level, Tobit regression model, Tomato yields