

The Role of Transport Investment and Enhanced Railway Accessibility in Regional Efficiency Improvement in Saudi Arabia: Data Envelopment Analysis

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Abstract : This paper explores the role of large-scale investment in transport sectors and the impact of increased railway accessibility on the efficiency of the regional economic productivity in the Kingdom of Saudi Arabia (KSA). There are considerable differences among the KSA regions in terms of their levels of investment and productivity due to their geographical scale and location, which in turn greatly affect their relative efficiency. The study used a non-parametric linear programming technique - Data Envelopment Analysis (DEA) - to measure the regional efficiency change over time and determine the drivers of inefficiency and their scope of improvement. In addition, Window DEA analysis is carried out to compare the efficiency performance change for various time periods. Malmquist index (MI) is also analyzed to identify the sources of productivity change between two subsequent years. The analysis involves spatial and temporal panel data collected from 1999 to 2018 for the 13 regions of the country. Outcomes reveal that transport investment and improved railway accessibility, in general, have significantly contributed to regional economic development. Moreover, the endowment of the new railway stations has spill-over effects. The DEA Window analysis confirmed the dynamic improvement in the average regional efficiency over the study periods. MI showed that the technical efficiency change was the main source of regional productivity improvement. However, there is evidence of investment allocation discrepancy among regions which could limit the achievement of development goals in the long term. These relevant findings will assist the Saudi government in developing better strategic decisions for future transport investments and their allocation at the regional level.

Keywords : data envelopment analysis, transport investment, railway accessibility, efficiency

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