

PRINCIPAL FACTORS CONTRIBUTING TO EFFICIENCIES AND ECONOMIC SUSTAINABILITY OF INTEGRATED RAILWAY SYSTEMS IN SOUTH AFRICA

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ABSTRACT

The performance of a railway system (infrastructure, railway vehicles (rolling stock) and operations) can be measured using a variety of indicators. These indicators are generally compiled over a defined period of time, most commonly, a day, month or a year or a combination thereof. The economic performance of railway networks is expressed in general terms by criteria such as effectiveness, efficiency and productivity.

This study focuses on the principal factors contributing to efficiencies of the integrated railway systems and unpacks sustainable strategies which can be adopted to ensure a continuous and consistent performance of the integrated system. The study focuses on the two Transnet heavy haul lines which are central to economic development of the country on the railway front.

Technical efficiencies and allocative inefficiencies are analysed using the method of frontier curves. An in-depth analysis on parameters such as, for Rolling Stock (reliability, availability, time utilization, distance utilization, and productivity); Rail Network (reliability, availability and maintainability) and Capital and Labour (net investment per employee, investment per ton of capacity, revenue and gross ton-km per employee) are undertaken with the aim of understanding their impact on technical and allocative efficiencies and their overall influence on the efficiencies of the integrated railway systems.

The study will draw conclusions on technical efficiencies and allocative inefficiencies as derived from the method of frontier curves applied to the input data.