

Combining the functional unit concept and the analytic hierarchy process method for performance assessment of public transport options

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ABSTRACT

This paper presents a case study covering the operational and [functional performances](#) of the Bus Rapid Transit (BRT), Light Rail Transit (LRT), and [Monorail](#) (MNT) modes in the [São Paulo](#) City, Brazil. The innovative multicriteria [decision aid](#) model (MCDAM) combine the use of a Functional Unit with the [Analytic Hierarchy Process](#) (AHP) method to access objective and [subjective preferences](#) of stakeholders and performances of alternatives of three transport options. The case study shows that the MCDAM has proven to be the most effective. The Functional Unit provided a common set of requirements to guide the [performance assessment](#) of the modal options. In addition, the evaluated stakeholders' preferences were combined with the performance assessment resulting into global priority indexes based on a linear [additive](#) function algorithm.

Keywords: Functional unit; Multicriteria decision aid model; AHP method; Public urban transport.