

The Impact of SITM Vehicle Breakdowns on Economic Losses and Perceived Service Quality in Cartagena

Impacto de las varadas de vehículos del SITM en las pérdidas económicas y la percepción del servicio en Cartagena

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2025-04-23

Abstract

Background:

Aims:

General Objective:

To analyze the impact of vehicle breakdowns within the Integrated System of Mass Transit (SITM) of the city of Cartagena on the economic losses of the operating company and on the perceived service quality by users.

Specific Objectives:

1. Identify the routes and locations with the highest frequency and costs of breakdowns.
2. Determine the main operational causes associated with breakdowns and their relationship with user satisfaction.
3. Quantify the economic losses caused by vehicle breakdowns in the SITM, taking into account operational and maintenance costs, as well as unproductive time.

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Methods:

Analysis of breakdown records, analysis of economic losses, assessment of impact by route and location, statistical analysis.

Results:

Conclusions:

Keywords: Stranded, Economic losses, Service quality, Users, SITM (Integrated System of Mass Transit).

Resumen

Antecedentes:

Objetivos:

Objetivo general:

Analizar el impacto de las varadas de los vehículos del Sistema Integrado de Transporte Masivo (SITM) de la ciudad de Cartagena en las pérdidas económicas de la empresa operadora y en la calidad del servicio percibida por los usuarios.

Objetivos específicos:

1. Identificar las rutas y ubicaciones con mayor frecuencia y costos de varadas.
2. Determinar las principales causas operativas asociadas a las varadas y su relación con la satisfacción del usuario.
3. Cuantificar las pérdidas económicas generadas por las varadas de los vehículos del SITM, considerando costos operativos, de mantenimiento y los tiempos improductivos.

Método:

Análisis de registros de varadas, análisis de pérdidas económicas, evaluación del impacto por ruta y ubicación, análisis estadístico.

Resultados:

Conclusión:

Palabras clave: Varadas, Pérdidas económicas, Calidad del servicio, Usuarios, SITM (Sistema Integrado de Transporte Masivo).

1. Introduction

The Integrated System of Mass Transit (SITM) in the city of Cartagena plays a fundamental role in urban mobility. Its proper functioning largely depends on the condition of the fleet and the operational efficiency of the vehicles. Consequently, one of the most recurring challenges faced by these systems is vehicle breakdowns or operational disruptions, which generate significant impacts for both the operating company and the users.

These breakdowns entail operational and maintenance costs associated with unproductive time. For users, such failures translate into delays, discomfort, and a loss of trust in the system.

This study aims to comprehensively analyze these failures within the SITM, starting with the identification of associated costs, as well as the routes and locations where they occur most frequently, in order to identify critical operational patterns.

Finally, the study seeks to quantify the economic losses resulting from breakdowns, highlight the main areas of impact, and assess the negative consequences for users, with the ultimate goal of enhancing transparency and rebuilding trust in the system.

2. Data

3. Materials and Methods

4. Results and Discussion

5. Conclusion and Recommendations

Acknowledgments

Appendix A. Dataset link

References

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