PREFACE

Jakarta, as the capital city of Indonesia, experiences persistent issues of traffic congestion and overcapacity in public transportation systems. These challenges highlight the need for accurate passenger load forecasting and optimal transportation planning to enhance operational efficiency and improve commuter experiences.

This thesis is organized into five chapters, each addressing key components of the research:

Chapter 1: Introduction This chapter outlines the background and rationale behind the study, emphasizing the need for accurate forecasting and optimization in public transportation systems. It also defines the objectives, hypotheses, and significance of the study.

Chapter 2: Review of Literature and Studies This chapter presents a comprehensive review of related literature and studies on public transportation challenges, time series forecasting, and optimization approaches in transportation systems, with a focus on Jakarta's public transportation network.

Chapter 3: Research Methodology This chapter describes the research design, data sources, and the forecasting methods employed, including the ARIMA model and its automated variant. It also explains the procedures for evaluating forecasting performance and the steps taken to calculate passenger loads and assess the sufficiency of train trips.

Chapter 4: Presentation, Analysis, and Interpretation of Data This chapter presents the forecasting results and analyzes the predicted passenger loads. It further interprets the implications for train scheduling, infrastructure development, and public transportation policies.

Chapter 5: Conclusion and Recommendations The final chapter summarizes the key findings and conclusions drawn from the study. It also provides recommendations for improving public transportation management and offers suggestions for future research on passenger load forecasting and transportation system optimization.

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