

ABSTRACT

Population mobility in big Indonesian cities such as Bandung continues to increase, causing traffic jams, air pollution and inconvenience in daily commuting. Although the government has invested in public transportation, its limitations in providing door-to-door services encourage people to use private vehicles, which exacerbates environmental problems. Electric bicycles, especially Electric Folding Bikes, offer an environmentally friendly and efficient alternative solution. However, public transportation regulations in Indonesia often do not accommodate Electric Folding Bicycles on the market. This research aims to design an Electric Folding Bicycle frame that is lighter, stronger and ergonomic, and meets public transportation regulations. The research method used is a case study, which includes data collection through observation, interviews and analysis of existing products. The design process was carried out using CAD simulation to optimize the materials and frame structure to ensure strength and durability. Innovations in the folding mechanism are implemented to increase portability and ease of use. The research results show that the designed folding bicycle frame has a lighter weight, optimal strength, and a folding mechanism that is more practical compared to existing products. Validation results from users and experts show quite high satisfaction regarding the shape, comfort, durability and practicality of the bicycle. The conclusion of this research is that the development of an innovative and regulatory-compliant Electric Folding Bicycle frame can increase the efficiency of urban transportation by reducing dependence on motorized vehicles , supporting the reduction of carbon emissions, as well as improving user experience. It is also hoped that this research can encourage the development of environmentally friendly transportation technology in Indonesia, creating a more sustainable and efficient transportation system.

Keywords: Population mobility, public transportation, electric folding bicycle, transportation regulations