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Entitled

*ESTABLISHING A SCOOTABILITY INDEX TO PRIORITISE ROAD AND FOOTWAY  
INFRASTRUCTURE IMPROVEMENTS FOR SMOOTH AND SAFE E-SCOOTER USAGE.*

by

Nadia Maksoud

Faculty Advisor

Dr. Hamad Al Jassmi, Civil and Environmental Engineering Department

College of Engineering

Date & Venue

Thursday, 1 June 2023

1:00 PM

F1-1117

Abstract

The intensifying use of electric scooters as a form of transportation calls for new infrastructure assessment methods to improve the smoothness and safety of facilities in which these devices are ridden. Despite the extensive research on the infrastructure requirements of bicycles, there is a dearth of studies on electric scooters. This study aims to define the main infrastructure requirements for electric scooters in an urban context. A mixed-methods approach is employed combining quantitative and qualitative data collection and regression analysis. To provide basis for a so-called multi-dimensional “scootability” index that covers all aspects pertaining the safety and smoothness of e-scooter rides, this study extracts the main scootability features through a comprehensive literature review, combined with the analysis of 149 micro-mobility crashes that occurred in the city of Abu Dhabi in years 2020 and 2021, as well as analysis of 2120 responses of an in-site questionnaire survey with micromobility users. Feature extraction was followed by assessments of roadway and footway conditions, through site observations of those facilities, and actual rider appraisals of e-scooter trips made along 93 most common road and footway sub-segments used by Abu Dhabi e-scooter riders. The study modelled the contribution of scootability features assessed by the researcher on the overall ride quality through linear regression equations, which identified “aesthetic quality” to have the most powerful effect on user satisfaction, followed by “footpath width”, “pathway connectivity”, and “obstacle presence”. The results of the sensitivity analysis showed that all features had a salutary influence on the overall user rating, with “aesthetic quality” having the greatest effect. These results provide invaluable insights for policymakers and urban planners looking for a systematic methodology to prioritize improving urban facilities to improve e-scooter users experience.

**Keywords:** Electric scooters, infrastructure requirements, scootability index, regression analysis, user satisfaction, micro-mobility.