

INTISARI

Bike-sharing merupakan salah satu solusi dalam memenuhi kebutuhan mobilitas serta menurunkan polusi udara. *Bike-sharing* dapat mengurangi *travel demand* perjalanan jarak pendek menggunakan kendaraan bermotor dan alternatif transportasi *first-last mile*. Sepeda kampus UGM adalah contoh *bike-sharing* yang berada di lingkup kampus. Selain meningkatkan aksesibilitas antar gedung kampus dan mengurangi kendaraan yang parkir, sepeda kampus menjadi salah satu langkah dalam program *green campus* untuk mewujudkan kampus *zero carbon emission* pada tahun 2050. Penelitian ini bertujuan untuk memformulasikan pengembangan layanan sepeda kampus sesuai dengan preferensi civitas akademika serta menentukan dampak sepeda kampus terhadap program *green campus*.

Penelitian ini dilakukan dengan beberapa analisis. Identifikasi karakteristik sosial-ekonomi dan pola perjalanan serta mendokumentasikan infrastruktur layanan sepeda kampus eksisting dilakukan dengan analisis deskriptif, hubungan karakteristik sosial-ekonomi dengan elemen *bike-sharing* dengan analisis tabulasi silang, preferensi pengembangan *bike-sharing* dengan analisis skoring, dan menentukan dampak sepeda kampus terhadap *green campus* dengan analisis perubahan emisi CO₂. Metode pengambilan data menggunakan kuesioner dan observasi langsung.

Hasil analisis menunjukkan karakteristik sosial-ekonomi didominasi oleh mahasiswa, laki-laki, usia 20-24 tahun, dengan pendapatan Rp500.000-Rp1.000.000. Pekerjaan dan pendapatan memiliki signifikansi terhadap elemen *bike-sharing*. Pola perjalanan didominasi tempat tinggal kos, jarak tempuh kurang dari 2 km, kepemilikan motor saja, dan moda yang digunakan ke kampus adalah motor. Layanan sepeda kampus memiliki 13 stasiun. Jenis stasiun terdiri dari *docking station* tertutup dan semi tertutup. Fasilitas sepeda, rambu, dan marka lumayan lengkap. Sistem peminjaman dan pengembalian sepeda menggunakan kartu identitas dengan maksimal peminjaman 30 menit. Elemen *bike-sharing* yang akan dikembangkan, yaitu sistem *bike-sharing hybrid*, *pedal assist e-bike*, stasiun modular dengan *semi-automated station*, jarak tempuh menuju stasiun 300-500 m, dan jalur *bike-lane* yang dicat. Dari perhitungan emisi, sepeda kampus dapat mengurangi emisi CO₂ motor sebesar 38,55% dan emisi CO₂ mobil sebesar 40%. Penurunan emisi ini meningkatkan kualitas udara di wilayah kampus UGM, sehingga layanan sepeda kampus dapat mendukung terwujudnya kampus *zero carbon emission*.

Kata Kunci: Sosial-ekonomi, pola perjalanan, *bike-sharing*, emisi, *green campus*

ABSTRACT

Bike-sharing is one of the solutions to meet mobility needs and reduce air pollution. Bike-sharing can reduce travel demand for short-distance trips using motorized vehicles and first-last mile transportation alternatives. Sepeda kampus UGM is an example of bike-sharing within the campus. In addition to improving accessibility between campus buildings and reducing parked vehicles, sepeda kampus are one of the steps in the green campus program to realize a zero carbon emission campus by 2050. This study aims to formulate the development of sepeda kampus services according to the preferences of the academic community and determine the impact of sepeda kampus on the green campus program.

This research was conducted with several analyses. Identification of socio-economic characteristics and travel patterns as well as documenting the existing sepeda kampus infrastructure was carried out with descriptive analysis, the relationship between socio-economic characteristics and bike-sharing elements with cross tabulation analysis, bike-sharing development preferences with scoring analysis, and determining the impact of sepeda kampus on green campus by analyzing changes in CO₂ emissions. Data collection methods used questionnaires and direct observation.

The analysis shows that socio-economic characteristics are dominated by university students, males, 20-24 years old, with an income of Rp500,000-Rp1,000,000. Occupation and income have significance to bike-sharing elements. Travel patterns are dominated by boarding house residence, travel distances of less than 2 km, motorcycle ownership only, and the mode used to campus is motorcycle. Sepeda kampus has 13 stations. Station types consist of covered and semi-covered docking stations. Bicycle facilities, signs, and markings are quite complete. The bicycle loan and return system uses an identity card with a maximum loan of 30 minutes. The bike-sharing elements to be developed are hybrid bike-sharing system, pedal assist e-bike, modular station with semi-automated station, 300-500 m distance to the station, and painted bike-lane. From the emission calculation, sepeda kampus can reduce motor CO₂ emissions by 38.55% and car CO₂ emissions by 40%. This emission reduction improves air quality in the UGM campus area, so that sepeda kampus services can support the realization of a zero carbon emission campus.

Keywords: *Socio-economics, travel patterns, bike-sharing, emissions, green campus*