

The Ecosystem and the Business Model Canvas of Mobile Battery Swap Charging Station for Electric Motorcycle

Renny Rochani

Research Group Industrial Engineering and Techno-Economic, Industrial Engineering
Department, Faculty of Engineering,
Universitas Sebelas Maret, Jl. Ir. Sutami, 36 A, Surakarta, Indonesia
rennyrochani@staff.uns.ac.id

Wahyudi Sutopo

Research Group Industrial Engineering and Techno-Economic, Industrial Engineering
Department, Faculty of Engineering,
Universitas Sebelas Maret, Jl. Ir. Sutami, 36 A, Surakarta, Indonesia
wahyudisutopo@staff.uns.ac.id

Abstract

The mobile battery swap charging station is designed for the purpose of three main things, namely, to increase the amount of energy charging infrastructure, to intensify the socialization to the communities regarding the knowledge of technical aspects of electric motorcycle and the financing aspects of electric motorcycle ownership. This research aims to explore the ecosystem of mobile battery swap charging station which is essential in Indonesia. Moreover, this research objectives is to develop a conceptual design business model canvas of Mobile Battery Swap Charging Stations (MBSCS) for electric motorcycles. The development of the MBSCS model is an alternative to increase the number of electric charging infrastructure quickly. This research combines the requirement of increasing infrastructure and improving socialization to the community regarding the advantages of using electric motorcycle through marketing communication media. Increasing the understanding of technical aspects of electric motorcycle is expected to increase people's motivation to adopt electric motorcycle. This research utilizes literature study to explore MBSCS business canvas model (BMC), MBSCS ecosystem, and MBSCS prototype design. The analysis illustrates the MBSCS ecosystem that align with the motorcycle users in Indonesia. The existence of MBSCS is expected to significantly increase the buying interest, adoption, and diffusion of electric motors more broadly.

Keywords

Ecosystem, Business Model Canvas, Mobile Battery Swap Charging Station, electric motorcycle

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Biographies

Renny Rochani is currently a Lecturer and Researcher at the Industrial Engineering and Techno-Economics Research Group, Department of Industrial Engineering, Universitas Sebelas Maret (UNS), Surakarta, Indonesia. She has got her PhD degree from The University of Canberra Australia, Master degree from Institut Teknologi Bandung and Bachelor degree from Institut Pertanian Bogor. For more than 20 years, she spent her time of doing business and since November 2021 she decided to join the academic communities in Universitas Sebelas Maret. Her recent research is to develop mobile battery swap charging station for electric motorcycle in Indonesia. The demand of electric motorcycle in Indonesia is enormous especially in urban area, therefore effort is required to significantly increase the user of electric motorcycle, which contribute to improve air quality in city area. The development of mobile battery

swap charging station is an alternative to solve problem in providing infrastructure and to create other business possibility.

Wahyudi Sutopo is a professor in industrial engineering and Head of Industrial Engineering and Techno-Economics Research Group, Department of Industrial Engineering, Universitas Sebelas Maret (UNS), Surakarta, Indonesia. He is also as researcher for centre of excellence for electrical energy storage technology (CoE-EEST), the president of the industrial engineering and operations management (IEOM) society for Indonesia's professional chapter, and Director, IEOM Asia Pacific Operation. His educational background is the profession of engineer from UNS (2018); Doctor and Bachelor in industrial engineering from Institut Teknologi Bandung (2011 & 1999); and master of management science from Universitas Indonesia (2004). His research interests include supply chain engineering, engineering economy & cost analysis, and technology innovation & commercialization. Dr Sutopo has completed research projects with more than 45 grants and carried out research projects funded by Institution of Research and Community Services - UNS, Ministry of Research and Technology / National Agency for Research and Technology, Indonesia Endowment Fund for Educational (LPDP), PT Pertamina (Persero), PT Toyota Motor Manufacturing Indonesia, and various other companies. He has written 4 textbooks and 7 chapter books and made 5 intellectual property rights (IPR) in the form of copyrights, and 3 patents. He has initiated to commercialize research outputs of UCE-EEST UNS related to energy storage technology and electric vehicle conversion through start-ups where he is one of the founders, namely PT Batex Energi Mandiri and PT. Ekolektrik Konversi Mandiri. Dr Sutopo has published articles over 185 documents indexed by scopus with H-index 12. His email address is wahyudisutopo@staff.uns.ac.id.