

# Evaluasi Dinamika Bisnis Industri Battery Leasing untuk Bus Listrik di Indonesia dengan Pendekatan Sistem Dinamis = Business Dynamics Evaluation of the Battery Leasing Industry for Electric Buses in Indonesia with System Dynamic Approach

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## Abstrak

Transisi menuju kendaraan listrik menjadi salah satu agenda utama pemerintah Indonesia sebagai usaha menurunkan emisi dari transportasi jalan. Bus adalah salah satu moda transportasi yang diperkirakan akan memiliki tingkat elektrifikasi tertinggi jika dibandingkan dengan moda transportasi lain. Walaupun begitu, masih terdapat banyak faktor yang menghambat proses adopsinya. Salah satu hambatan terbesar proses adopsi bus listrik adalah besarnya biaya akuisisi bagi operator bus. Battery Leasing merupakan skema model bisnis inovatif yang dapat mendisrupsi model bisnis saat ini sehingga dapat meningkatkan daya beli operator bus dan mempercepat proses adopsi. Industri battery leasing merupakan sistem yang kompleks dan dinamis sehingga diperlukan beberapa alternatif strategi dalam pengembangan industri battery leasing. Perusahaan battery leasing membutuhkan evaluasi secara sistematis untuk memperkirakan keberlangsungan sistem bisnis perusahaannya. Simulasi dengan pendekatan sistem dinamis dapat membantu memperoleh pengetahuan mengenai faktor-faktor pendorong seperti variabel eksogen dan intervensi kebijakan dalam pengembangan industri battery leasing. Tiga jenis skenario disimulasikan bersama dengan 3 alternatif kebijakan berupa subsidi pengadaan baterai, pemberian insentif daur ulang baterai, serta pembebasan pajak perusahaan. Ketiga alternatif kebijakan secara positif mempengaruhi keberlangsungan perusahaan secara finansial. Subsidi pengadaan baterai mampu memberikan tingkat akuisisi pelanggan yang paling tinggi serta keuntungan bagi penyedia jasa battery leasing yang paling tinggi.

.....The transition to electric vehicles is one of the main agendas of the Indonesian government as an effort to reduce emissions from road transportation. Bus is one of the transportation modes that is expected to have the highest electrification rate when compared to other modes of transportation. Even so, there are still many factors that hinder the adoption process. One of the biggest obstacles to the adoption of electric buses is the high acquisition cost for bus operators. Battery Leasing is an innovative business model scheme that can disrupt the current business model so as to increase the purchasing power of bus operators and accelerate the adoption process. The battery leasing industry is a complex and dynamic system, so several alternative strategies are needed in developing the battery leasing industry. Battery leasing companies need a systematic evaluation to estimate the sustainability of the company's business systems. Simulation with a dynamic system approach can help gaining knowledge about the driving factors such as exogenous variables and policy interventions in the development of the battery leasing industry. Three types of scenarios are simulated along with 3 alternative policies which are subsidies for battery procurement, battery recycling incentives, and corporate tax exemptions. The three alternative policies positively affect the company's financial sustainability. Battery procurement subsidies are able to provide the highest level of customer acquisition and the highest profit for battery leasing service companies.