

ABSTRACT

Electric conversion vehicle is the process of changing the motor drive system of a motor vehicle from an oil-fueled motor (BBM) to an electric motor. In Indonesia, the realization of the use of electric motors is still low. However, Electric Vehicles (EVs) play an important role in sustainable development towards an environmentally friendly transportation sector that is in line with Sustainable Development Goals (SDGs) 7, the use of clean and affordable energy and SDGs 13, climate change. Elders Elettrico Surabaya also has a great opportunity in the electric vehicle industry in Indonesia which offers innovative solutions in accelerating the transition towards the use of electric vehicles, especially the Convertible Electric Vespa. Although it has begun to be implemented and has received attention in the development of electric vehicles in Indonesia, it still requires a feasibility analysis. So that it can find out whether this innovation can meet the criteria from TKT 6 to TKT 7.

The purpose of this research is to determine the cost of mass production, establish the ideal selling price and production volume, and obtaining feasibility limits. The economic feasibility analysis is analyzed from financial aspects that consider market aspects and technical aspects. And the research conducted is descriptive qualitative research that emphasizes an exploratory approach.

This research will examine the economic feasibility of products owned by Elders Elettrico Surabaya by considering technical aspects, market aspects, and financial aspects based on capital budgeting assessment criteria, namely Net Present Value (NPV), Internal rate of Return (IRR), and Payback Period (PBP) and sensitivity analysis. Market data was obtained using the TAM, SAM, and SOM market size estimation methods. The estimation results show that TAM is 130,000 units of electric motorcycle ownership in Indonesia, SAM is 5,230 units of electric motorcycles in the Java region as the target segment, and SOM is 262 units. Technical aspects are analyzed to determine the number of employees, tools and materials, and layout. As well as conducting a sensitivity analysis that will be presented with a tornado diagram to measure risk and impact.

The results showed that the Conversion Electric Vespa is feasible because it has an NPV value of Rp275,790,827, an IRR value of 48%, and a PBP of 3 years. The Vespa Electric Conversion will be viable if the threshold is a 45% decrease in profit margin, cost of goods sold, and sales growth, as well as a 45% increase in salaries and marketing expenses. If it exceeds this threshold, the business will suffer losses or become unviable. This innovation has also fulfilled the indicators of TRL 7.

This research contributes to increasing business attractiveness in the electric vehicle industry in Indonesia. It is suggested that business owners can develop additional sources of income, increase sales volume and reach a larger market, and develop derivative products or services.

Keywords: *Electric Vehicle Conversion, Economic Feasibility Analysis, Capital Budgeting, Sensitivity Analysis, Electric Vespa Conversion*