SUMMARY OF MASTER'S DISSERTATION

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Title
An Evaluation of Diffusion Possibilities of Ultra-Small Vehicles in Consideration of Consumers' Preference

Abstract:

The need for transportation is changing with the arrival of the super-aging society in Japan. Although 4 or 5 seats cars are now sold in fact, the average number of passengers per car is 1.33 on weekdays and 1.72 on weekends, that is to say, there is a difference between the actual number of passengers and the capacity. Therefore a new transportation system is required in anticipation of the demographic composition of the future with the view of meeting the needs of consumers and the protection of the environment.

In existing research, the evaluation of the possible spread of electric vehicles and fuel cell vehicles has been for the long-term. But ultra-small vehicles in Japan aren't evaluated for the long-term. The purpose of this research is to help dissemination strategy of ultra-compact vehicles based on evaluating possibility of diffusion by revealing consumers' preference and forecasting demand. In concrete terms, analyzing problems and stakeholders, categorizing similar product, case study of both domestic and foreign and as follows:

① After user segmentation and deciding driving scenarios, how the functions and price ranges are revealed by conjoint analysis and PSM analysis.
② Based on the parameters to be estimated from the sales of similar product, how many vehicles will be demanded in long-time is revealed by Bass model.
③ Analyzing the amount of CO_2 emissions during the ultra-small vehicles' driving for the environmental evaluation.

As a result of the analysis, the following findings were obtained.

[1] Preference of ultra-small vehicles is the product price will be considered in comparison with other standards. Electric drive, low-speed and two-seater are desired as characteristics of the product.

[2] Although vehicle makers hope to sell a vehicle at about JPY 800,000, prices that consumers really wants to buy at is about JPY 400,000, that is, divergence has occurred. Simulation results from population and parameters estimated from ultra-small vehicles sold abroad, the cumulative demand will be about 480,000 in 2030 in the market of Japan considering small cars as potential demand.

[3]Two-seater mobility can be less CO_2 emissions per capita compared to the one or four-seaters.

Key Words:

Ultra-Small Vehicles, Consumers' Preference, Demand Forecast, Bass model, Environmental Evaluation