Seminar work

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Applied game theory

1 Problem solved

The article deals with the problem of construction of charging infrastructure and its

charging in urban residential areas for electric cars. The study focuses on the feasibility

and overcoming this dilemma through various subsidy incentive mechanisms and the

sharing of economic benefits between the government, charging infrastructure

operators, real estate agents and electric vehicle users themselves. Using evolutionary

game theory, the authors create a theoretical model based on strategic interactions

between various factors in supporting charging devices in urban residential areas.

2 How game theory was used

The authors used the evolutionary theory of games, where 4 main players perform. The

first player is the government, which provides subsidies for electromobility and the

construction of the necessary infrastructure. It also oversees companies and organizes

electric car users. The government, rather than the player, acts as a market regulator by

subsidizing all participants.

Other players are real estate agencies and charging infrastructure operators. In this case,

real estate agents should be responsible for investing in charging stations and selecting

their location where these stations will be installed. Charging infrastructure operators

are responsible for the operation and management of these stations. The last player is the

users of electric cars, who use the created structure of charging stations, which exists

thanks to the first three players.

As already outlined, the first three players create a cooperation agreement. Thus, the

government provides subsidies that are drawn by both real estate agencies and charging

station operators. Real estate agencies use these subsidies for the construction of stations

and charging station operators, they use subsidies to maintain services and provide them

to customers. Together, they form one large entity, to which real estate agencies bring the

creation of infrastructure and the operators provide recharging infrastructure