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Electromobility for tourists: testing business models in the Paris region

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Abstract

Electric vehicles (EV) bring benefits for the urban environment but represent an additional cost for households. That is why the spread of electromobility starts with niche markets appropriate to their territorial context. On this principle, we design a business model for an EV sharing scheme based on assumptions about sites attractive to tourists to the technical means of production passing by the estimate of potential demand. To address the challenge of profitability, several scenarios are tested, with different fleet sizes and financing costs. In the model, investment costs represent 26 to 34% of total costs and variable costs account for 50 to 62% of operating costs. The project can be undertaken regardless of fleet size, provided that its financing cost is 8% or less. It raises questions about the distribution of the value generated.

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1. Introduction

Electromobility – the use of electric vehicles (EV) – brings benefits for the urban environment (less noise and pollution), but represents an additional purchase cost for users. For purely electric vehicles, battery capacity limits the range between recharges, which also contributes to restricting household demand. In France, around 30% of households might be interested in buying an EV, because of all the measures introduced in favour of electric vehicles

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(Windish, 2013). These households are motorised, have access to private parking and can continue to meet their mobility needs while replacing one of their internal combustion vehicles with an EV. The purchase of an EV is therefore primarily motivated by financial advantage, since the total costs of owning an EV are lower than for an internal combustion vehicle. The environmental benefit, for its part, is indirectly supported through the purchase bonus awarded by the government. Nonetheless, such potential buyers remain a small proportion of French households, and it is possible that some of them prefer the second-hand market which represents almost 60% of vehicles sold in France today. That is why the spread of electromobility begins with niche markets, mainly utility vehicles in urban conditions and shared vehicle fleets for companies. In both these cases, the instigator is a business: it decides to acquire EV as one of the factors in the profitability of its activity.

We looked for other niche markets where EV ownership could be worthwhile in introducing a specific service, appropriate to a given scale: the home, the neighbourhood, a road axis or the whole conurbation. We identified a dozen niches (Leurent et al, 2016). From among them, we propose to develop an EV sharing scheme aimed at tourists visiting Disneyland Paris, Europe's leading tourist hub. We construct a theoretical business model and seek to evaluate its viability. This textbook case raises questions about how including tourists in the scope of transforming urban mobility, the profitability of new mobility services and the distribution of the value generated between public and private actors.

Section 2 explores the development of shared mobility services, which are vectors of electromobility. Section 3 describes the research terrain, i.e. the new town of Marne-la-Vallée, which is home to the Disneyland Paris theme park, in the east of the Paris region. Section 4 presents a shared mobility service targeting families visiting Disneyland Paris. Section 5 develops the business model of the service. Section 6 reaches conclusions about the viability of such a service in terms of profitability, value sharing and territorial embeddedness.

2. Shared mobility services and electromobility

2.1. The impacts of electric on mobility

The spread of electromobility brings about changes in the production of mobility. To begin with, electric technology is one of the instruments for producing sustainable mobility (Banister, 2008), by limiting local pollutant emissions and reducing noise pollution from vehicles.

The spread of electric vehicles also encourages carmakers to adjust their economic model: while they continue to sell the vehicle, they rent the battery. This brings a shift from product-based business models to service-based business models (Ceschin and Vezzoli, 2010). Carmakers become service providers, some of them – such as Daimler with its Car2Go scheme or Renault with TwizyWay – to the point of providing car sharing services (see 3.3). With this phenomenon, there is a rapprochement with the role of traditional car hire firms, which are themselves increasingly becoming car share operators (Shaheen and Cohen, 2013).

Finally, EV use has a positive effect on the behaviour of motorists who, once they have tasted electric, are reluctant to return to internal combustion. In France, the company La Poste has equipped its postal delivery staff with 5,000 Renault Kangoo ZE. The staff appreciate the ease of driving an EV (smooth acceleration, no gearbox, no noise) and no longer want to go back to internal combustion (Simon, 2013). Another survey asked users of the Car2Go car sharing scheme in Ulm in Germany about their use of the electric and internal combustion vehicles provided under the scheme. The results show that EV users in car sharing schemes are more inclined to dispose of their own car than those who use an internal combustion vehicle for car sharing (Firnorn and Müller, 2015).

2.2. Increasing diversity of shared mobility services

Shared mobility is part of a wider movement – the shared economy – that relies in part on the extensive use of digital technologies. Still only a niche market a decade ago, shared mobility is now embodied in a multitude of services around the world, albeit not yet defined. In fact, there is as yet no consensus in the scientific literature over the boundaries of shared mobility, with some encompassing traditional car rental and others emphasising the importance of digital applications (Le Vine and Polak, 2015). Nevertheless, a common trend is apparent towards a gradual

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