

Drivers' experience and attitudes towards EFVs



Imperial College
London



Issue

To understand fleet drivers' attitudes and experiences towards electrification of urban logistics fleets.

Solution

An experience survey carried out with drivers before and after the deployment of electric freight vehicles (EFVs) for qualitative insights into their experiences and shifts in attitudes.

Results & benefits

The majority of the drivers are in favour of replacing conventional diesel vehicles with electric vehicles. Most drivers speak very highly about their electric freight vehicles.

Context

Drivers are of great importance due to the role they play in the logistics chain. Logistics companies care about the welfare of their drivers and believe that happy drivers lead to improved customer experiences, a good company image and increased income.

However, the drivers of electric freight vehicles are not normally able to greatly affect the decision of EFV deployment, while the deployment of Electric Freight Vehicles (EFVs) has a great impact on drivers' day-to-day lives due to significant differences of vehicle characteristics between an EFV and an ICEV (Internal Combustion Engine Vehicle).

It is important therefore to understand the attitudes towards and experiences with EFVs from a driver's perspective. This includes aspects they like and dislike most about EFVs, their charging experience, and whether there is a problem of range anxiety as reported by drivers of electric passenger cars.

Method

The primary research method was the use of an experience survey before and after the deployment of electric freight vehicles. The survey format was mainly based on questionnaires, with follow-up telephone interviews with some of the key stakeholders if it was needed.

Most of the drivers surveyed for this study were employed by logistics companies directly. They usually only charged their vehicles at depots overnight, although a small number of drivers had to charge their vehicles during deliveries.

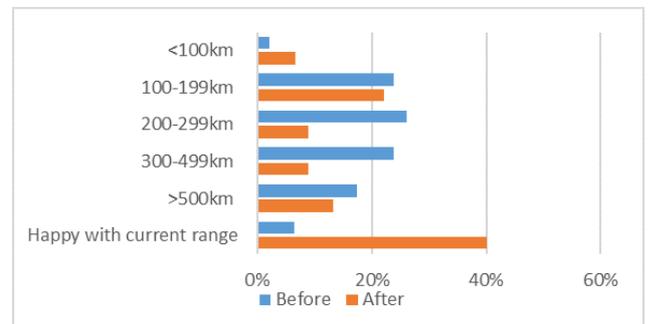
The questionnaires were returned by more than 50% of all drivers who worked with a FREVUE co-funded EFV. More specifically, 48 drivers responded to the "before" survey which was conducted in mid-2014, while 45 drivers responded to the "after" survey which was held in late-2016. It should be noted that when the "before" survey was carried out, 64% of the respondents already had some experiences with EFVs, although most were still in early stage of using their vehicles.

Results

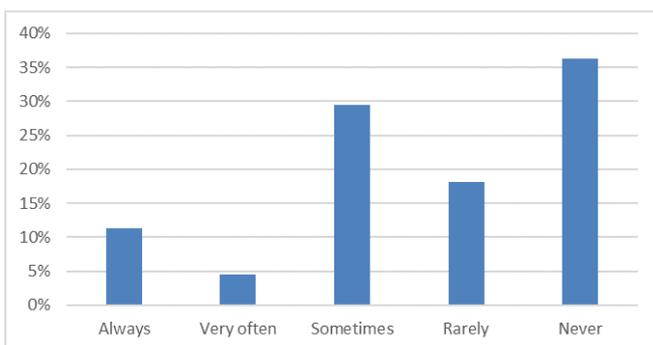
In general, drivers speak highly about EFVs. Many drivers who used to operate an ICE vehicle complained that these were dusty, smelly and that they had to keep fixing the gear and clutch. Now with an EFV they enjoyed instant power, quietness, clean and simple operations. They also think EFVs have significant environmental benefits, and therefore are proud to drive them.

Preferred range

A significant shift in the drivers' perception of range of the electric freight vehicles can be observed. As shown in the adjacent plot, more drivers were happy with the range capabilities of their EFVs at the end of the project than the beginning. In addition, drivers realised that EFVs are well suited for urban logistics, therefore their desire for long range vehicles were also reduced.



Range anxiety



Range anxiety is the fear that an electric vehicle will run out of power before the destination or a suitable charging point is reached. It has been a well-studied topic for electric passenger cars. Our survey shows that around 15% of drivers reported that they were always or very often concerned about running low on battery. Nearly 55% of the drivers were rarely or never concerned about range, and the remaining 30% of drivers were sometimes concerned, as shown in the adjacent plot.

We found range anxiety is affected by the following two factors for EFV drivers:

1. Planning and optimisation of the delivery arrangements. Range anxiety is directly related to the remaining battery state of charge when the vehicle is returned to its depot.
2. Seasonal variability: 25% of respondents reported that they noticed a significant change of range due to seasonal impact. This has been mostly mentioned by drivers in northern Europe where a range reduction of 30%-40% in winter was reported.

Range anxiety also affects drivers' comfort. 17% of drivers reported not using air conditioning or only using it in unbearable conditions (including both heating and cooling), in order to reduce battery usage. For a small minority of drivers, this became a trade off in winter about whether to heat their vehicle to improve comfort or to preserve battery for their peace of mind.

What do drivers like and dislike about EFVs?

Drivers were asked the open question about what they like or dislike about electric freight vehicles which is summarised below:

Things drivers like most	No. of mention
Environmental benefits	6
Simple operation	5
Instant power / Fast acceleration	4
Comfortable	3
No need to fill up at petrol station	3
Quietness	2
Smoothness of ride	2
Good company image	1
Pride	1

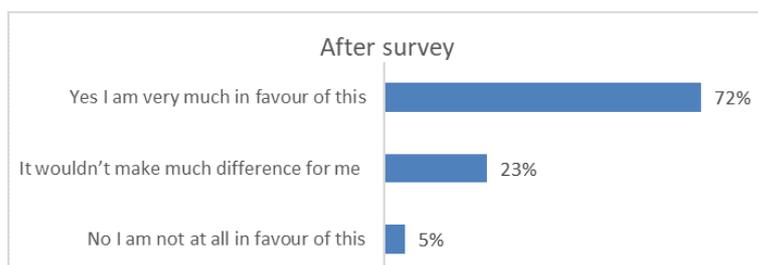
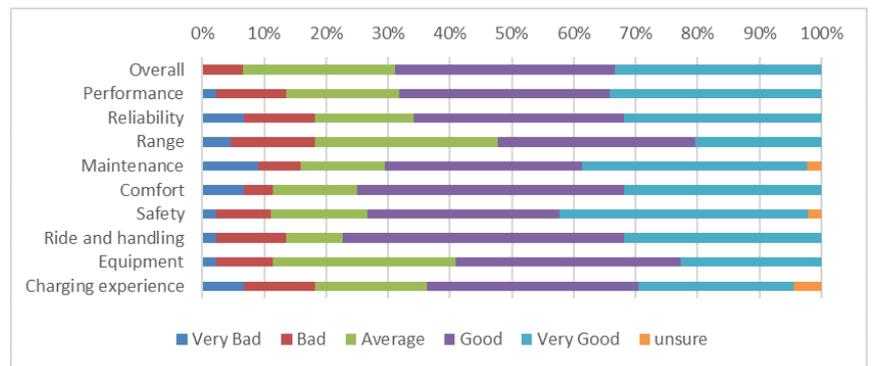
Things drivers dislike most	No. of mention
Limited range/Battery capacity	13
Too quiet	4
Equipment not available/ satisfactory	3
High purchase price	2
Poor reliability	2
Limited load capacity	1
Reduced performance in winter	1
Uncomfortable	1

A number of drivers mentioned that driving an EFV requires a higher level of alertness. Due to quietness of the vehicles under low speed operation, pedestrians and cyclists may fail to notice oncoming EFVs.

Attitudes towards the vehicles

Overall, 70% of respondents had a good or very good experience. Less than 10% of the drivers reported a bad overall experience.

Looking at detailed categories, the categories achieving highest scores are comfort, safety and ride and handling. Range has the lowest score with around 20% of the drivers being unhappy with it, as shown in the adjacent plot.



In terms of drivers' attitudes towards electric freight vehicles, 72% of the drivers were in favour of replacing conventional ICEVs with EFVs, 23% didn't think it would make any difference to them and 5% were against. Comparing this to the results of the same question conducted in the before survey, there is a 12% increase in the number of drivers who are in favour.

Lessons learnt & Recommendations

- Delivery routes and distances should be planned beforehand and conservatively to make sure there is still a comfortable level of charge when the vehicles are returned to the depots. This will greatly reduce range anxiety for drivers.
- Seasonal variations of battery performance should be considered when planning delivery routes, especially in Northern Europe where a drop of 30-40% of range performance is reported during cold winters, which also contributed to range anxiety
- If additional charging is required between delivery, our Oslo demonstrator showed that queues are likely at public charging points, which will cause additional delay and loss of income to both drivers and logistics companies. One of the solutions is to use one's own charging facilities or to pre-book charging points in advance if possible.

Further information

FREVUE Coordinator: Tanja Dalle-
Muenchmeyer
tdmuenchmeyer@westminster.co.uk

FREVUE website: www.frevue.eu

Yanjie Dong
y.dong13@imperial.ac.uk



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