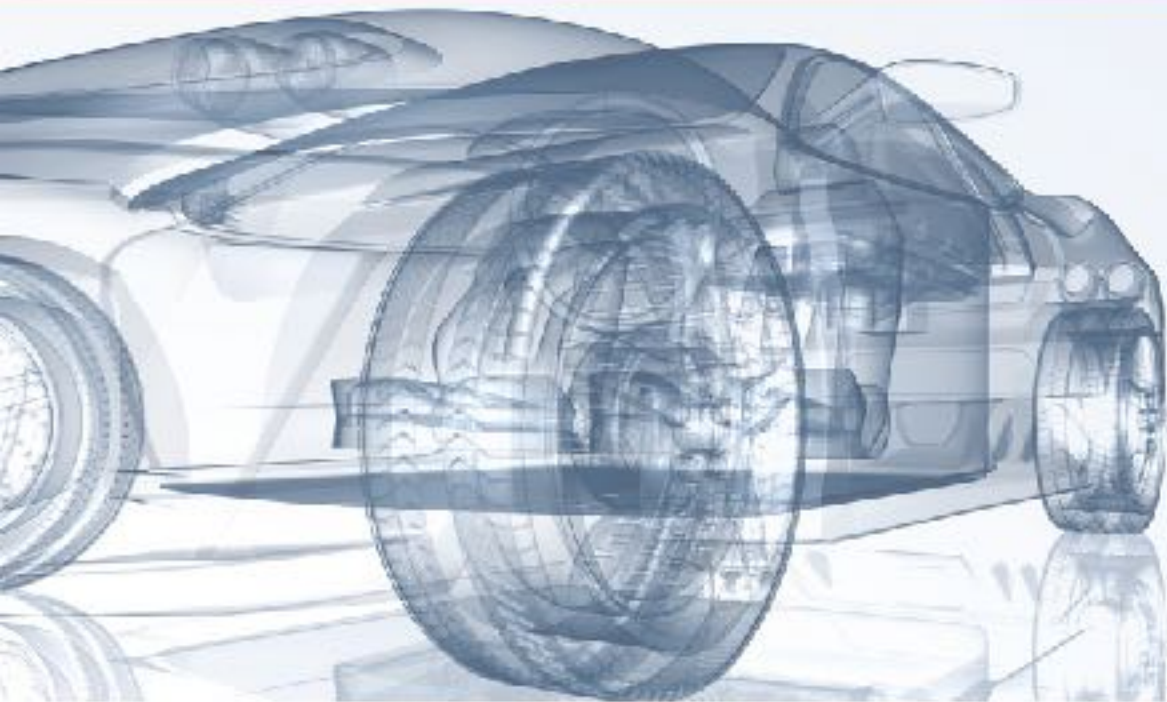


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Lessons learned from electric cars in daily taxi operation in Gothenburg

Oscar Olsson, Anne Faxér, Magda Collado, Johan Wedlin, Stefan Pettersson



Agenda

- Background
- Methods
- Results: driver experience
- Results: customer experience
- Results: vehicle data
- Discussion
- Conclusion

Background

Elmob - a shared electric mobility platform initiative





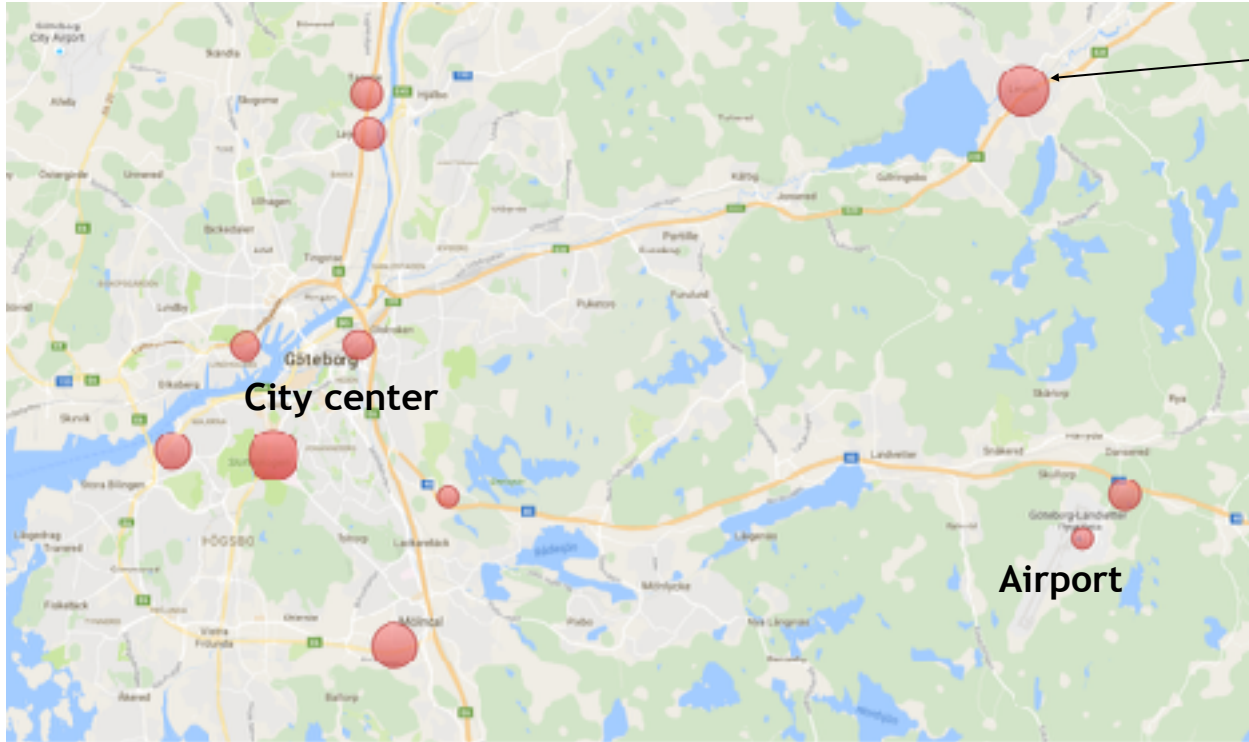
AIM

Facilitators and barriers of electric taxi operation

Changes in user behavior

How well customer needs are served

Background: usage



One of the taxi companies locates here.

Manoeuvre of electric taxis

One of the Tesla taxi is based in Lerum and charged overnight normally.

The other Tesla taxi is based in Gothenburg and fast charged normally.

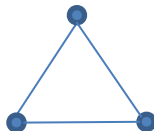
Methods for data collection	Data source			
	Drivers	Vehicle	Present customers	Potential customers
Semi-structured in-depth interviews	✓ (face-to-face interview)			✓ (30min phone interview)
Questionnaires			✓ (in-car tablets)	✓ (online survey)
Vehicle sensors		✓ (built-in sensors)		

Results: driver experience



Facilitators/Barriers

- Facilitators: low operational cost
- Barriers: high purchase price
- Potential: better income possibilities



Vehicle performance

- Large batteries are not “needed”.
- Drivers sometimes prioritize fast-charge opportunities. (1-6 times/month)

Changes in user behaviors

- Better driving experience
- Prefer opportunity charging at fast charger.
- Received ride request directly from customers.

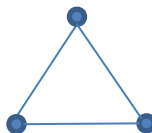
Facilitators/Barriers

Decisive factors in the choice of transport modes.



After trying the electric taxi, the willingness to pay **rises** among the customers.

Mobility needs fulfilled?



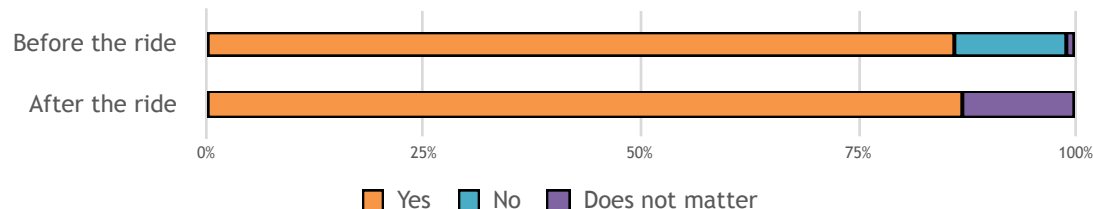
After trying the electric taxi, most customer will choose it again (86%).*

No one reported negative experience with the taxi, and 85% reported relatively positive.

Changes in user behaviors

Minimum - passive

Purposes of using shown no difference against a normal taxi.



Facilitators/Barriers

Fast-charged vehicle (to 100% of max SOC) : decreased 3% battery capacity after one year.

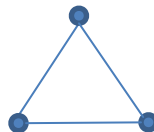


Overnight-charged vehicle (to 90% of max SOC): remain almost the same battery capacity after one year.

Battery status

Vehicle driven at more than **80% SOC** most of the time.

Two different charging patterns observed and both worked fine.

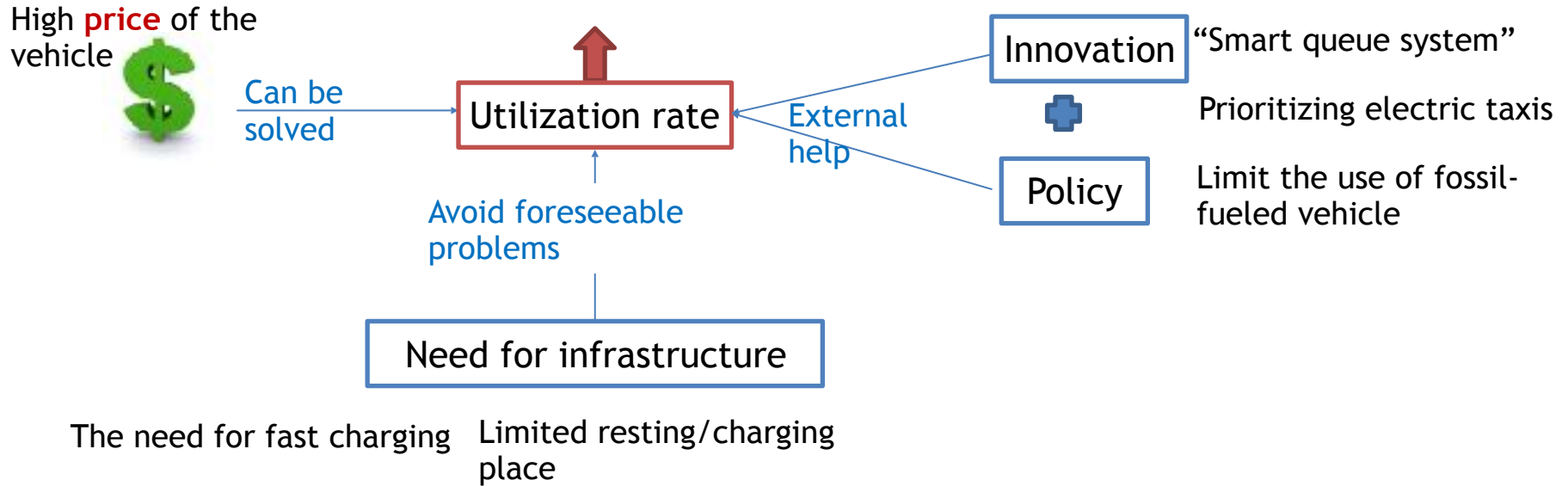


Charging behaviors

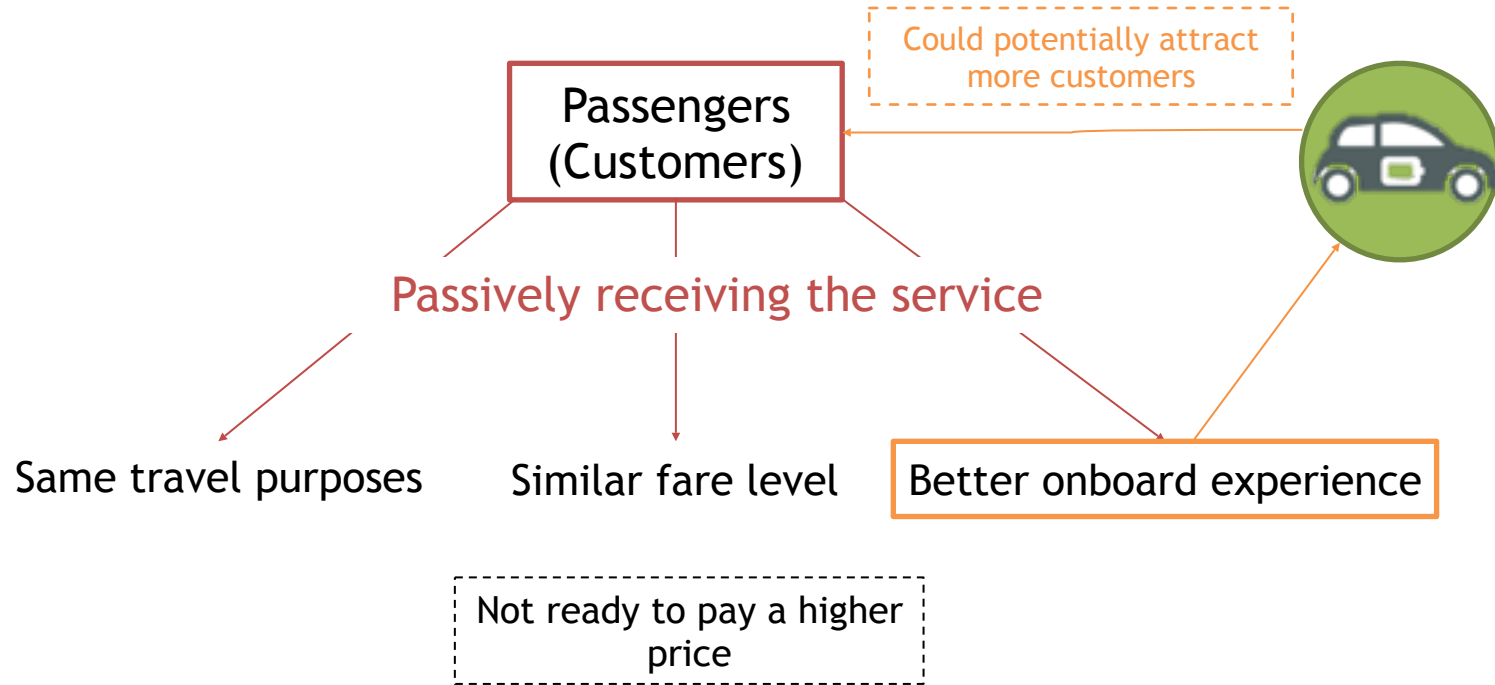
Charged **4-9** times a day.

Strongly preferred fast-charger in daytime while taking rest.

Discussion: driver perspective



Discussion: customer perspective



Discussion: comparison with other initiative

Electric taxis in Elmob



- 2 Teslas in Gothenburg metro. (since 2015)
- Owned by small companies
- Dynamic routes in Gothenburg
- Common taxi passengers
- Bottom-up: find out incentives, grow organically

Electric taxis in Schiphol

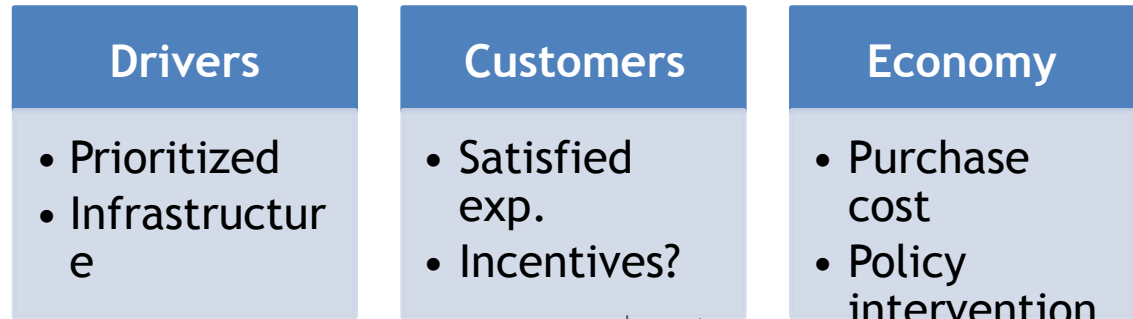


- 176 Teslas in Schipholtaxi (since 2014)
- Owned by Schiphol Group
- From and to the airport
- Airport travellers
- Top-down: effective, need to find the drive

Conclusion



Long range electric vehicles as taxis - a feasible solution



How to scale up?

How to motivate passengers to favour electric taxis?

Allowing electric taxis to be in service for a longer time.

Thanks for your attention.
Questions?

