

PERCEPTIONS OF USING ELECTRIC- (EFT) AND ALTERNATIVELY FUELED FREIGHT TRUCKS (AFFT) AMONG ROAD HAULAGE COMPANIES

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Agenda

- Background
- Purpose, Aim & Research Questions
- Methodology
- Findings
- Discussion and Conclusions
- Future Directions



Source: Stock Images

Background

Perceptions among freight companies

- Growing potential to replace conventional trucks
- Lead to positive social & environmental effects
- Hindrance: technological issues

Factors Affecting Competitiveness of EFTs & AFFT

- Local characteristics (landscape, temperatures)
- Financial assistance & charging options
- Driving range, battery life & purchase cost
- Laws & policies

Barriers of EFTs & AFFT

- High initial investment, including high purchase price
- Technological challenges, for example, short driving range
- Dearth of charging/ refueling infrastructure
- Limited repair & maintenance expertise & stations
- Limited experience in using EFTs in cold winters

Benefits of EFTs & AFFT

- No or low noise in EFTs
- Under certain circumstances, EFTs have zero emissions
- Due to the environmental benefits, the companies improve their brand image by buying EFTs & AFFT

Recommendations to accelerate adoption of EFTs & AFFT

- EFTs must extend their range, reduce purchase price
- EFT & AFFT users should also be provided with tax incentives.
- Involve all stakeholders of the EFT-ecosystems to work in synergy, to conquer the barriers
- Delve deeper in research & development
- Train & employ specialists for smooth operation & maintenance
- Increase number of charging options

(For more information, please refer the source list at the end of the presentation)

Purpose, Aim & Research Questions

- **PURPOSE:** To find out the current perceptions of road haulage companies on the deployment and the use of EFTs & AFFT as fleet vehicles in Finland, both as a part of urban logistics operations and long-haulage transport.
- **AIM:**
 - To clarify and estimate the prospects about the willingness to invest in and to deploy EFTs and AFFT,
 - To investigate the possible barriers to invest in EFTs or AFFT, now and in the future.
- **RESEARCH QUESTIONS:**
 - I. What kind of perceptions do road freight companies have about EFTs or AFFT?*
 - II. What are the factors affecting the competitiveness of the use of EFTs or AFFT?*
 - III. What are the current barriers to and benefits of the deployment and the use of EFTs or AFFT?*
 - IV. What are the recommendations offered by road freight companies for accelerating the growth of the potential of either electrification of freight trucks or using AFFT?*

Methodology

- Literature review
- Case study in Finland
 - Semi-structured themed interviews & analysis (September & October 2021)
 - We interviewed 6 freight transport companies (Out of 14 companies contacted)
 - 5 medium-sized independent companies & 1 subsidiary of international transport company
 - Operating in Finland
 - Interviewees were CEOs and/or Directors of Operation and Development
 - Both urban logistics and long-haulage transport and service operations
 - All the companies had experiences in using EFTs &/or AFFT's -> in exploring the technical & operational advantages and obstacles in daily operations



Source: <https://www.mapsland.com/>

Some opinions

"It is always dangerous in its own way to mess with the market economy, but on the other hand, tax decisions can also make a lot of progress."

"If transport companies have to pay for this environmental change, then we face an impossible task."

"Innovation activity cannot be forgotten."

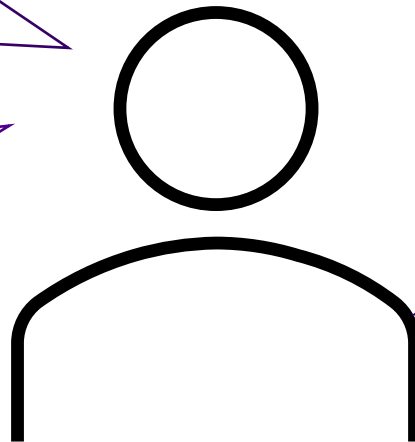
"Of course, it is company-brand and -image thing"

"I believe that the electric fleet will be in one form or another in future road freight transport."

"Biogas, as a fuel, is a good option, but can suddenly remain an intermediate thing if electricity or hydrogen evolves into a good alternative fuel."

"So, it's really a challenging situation, because even if one wants to invest in EFTs or AFFT, it's still very foggy."

"It is certainly the case that, no matter whether it is gas-powered or any other AFFT, if there is no infrastructure, then it is hard to be the first ones to use it in transport operations."



Findings - Perceptions of freight companies

- EFT & AFFT are both environmental-friendly & adds brand value
- Issues of EFT: Charging options & driving range
 - Due to small driving range, EFTs are not suitable for long distance operations.
- Issues of Gas-powered trucks: Refueling infrastructure development, and maintenance & repair (lack of expertise & service stations)
- Future of Road Freight Transport:
 - Freight vehicles will be non-polluting, and there will be no more trucks using fossil fuels.
 - There would be a variety of zero-emission options for freight companies, which includes EFTs, biogas-powered trucks, renewable diesel-fueled trucks, hydrogen-powered trucks, and biodiesel-powered trucks.
 - More attention will be paid on whether electricity (to be used for charging EFTs) is being produced by renewable resources.
 - EFTs will have batteries of larger capacities & will have competitive purchase price.
 - People would have also gathered more experience of driving in the winters of the Arctic region.

→ All companies have experiences with EFT &/or AFFT. They also have future adoption goals & have plans to invest in EFTs &/or AFTs.

Findings - Factors Affecting Competitiveness of EFTs & AFFT

- Gas-powered trucks

- They are suitable for all types of transport operations (short distance, long distance & urban deliveries)
- There should be widespread availability of refueling stations, and maintenance & repair stations, for proper transport operations

- EFTs

- They are suitable for transport operations that are in the city, local, for pick-up- & distribution-work
- They are best suited for transport in the city and urban areas (noise-free, range)
- An issue with them is that they are heavier than diesel trucks (due to battery weight) → this reduces the payload of EFTs



Findings – Barriers & Benefits of EFTs & AFFT

Barriers

- Dearth of charging/refueling infrastructure
- Inexperience in maintenance & repair, and lack of service stations
- EFTs are technologically unsuitable (small driving range)
- Willingness of the freight companies to invest is low, due to the risks involved & the high price of the vehicles
- Unknown resale value
- Long waiting times for delivery of new vehicles

Benefits

- Emissions-free (during transport operations)
- Environmental-friendly
- No or low noise in EFTs
- Availability of purchase incentives (in Finland, it is already available for gas-powered trucks; it is proposed for EFTs)
- Improves brand image -> good for marketing & promotes corporate social responsibility

Findings - Recommendations to accelerate adoption of EFTs & AFFT

Role of Stakeholders

- Manufacturers should provide alternate options of trucks with better technology & at lower prices
- Development of charging/ refueling infrastructure
- Collaborations between government, researchers, and manufacturers, to work together to understand the future course of action based on individual experiences from the past
- Improve & invest in research and development
- Government should make more suitable policies (purchase subsidy, tax benefits) & introduce government-sponsored investment loans.

Measures to Accelerate Adoption of EFTs &/ or AFFT

- purchase subsidy
- tax benefits
- higher number of charging & refueling stations
- research funding
- common database with emissions, lifecycle costs, etc. available as public information for the taxpayers (customers)

Discussion and Conclusions – 1/2

The findings are in line with the previous research.

- Interviewees generally welcomed green and environmentally friendly development, and, currently, the adoption of EFT and AFFT in transport operations is a “hot topic”.
- Transport companies are willing to invest in new technologies and alternative fuels, only if it is economically viable and if the barriers are conquered.
- Transport companies are following the technological development and waiting for technology to evolve to offer better solutions
- EFT, as a sustainable vehicle option, evokes both positive and negative emotions
 - They are currently suitable for distribution in urban areas, but it is not yet an option for heavy or long-haulage transport
- Observation: gas-powered trucks are more widely used but are not forerunners in the zero-emission vehicle race.

Discussion and Conclusions – 2/2

- All interviewees want to be involved in the development, but several mentioned that they do not want to be a pioneer → There is no desire to take big or unnecessary risks in investments as there are still a lot of uncertainties and barriers
- However, some of the interviewees believed the transition period to new types of freight vehicles would be less than ten years
- Cooperation among stakeholders and commitment to a common goal and shared vision for the future is needed → Transition and environmental goals cannot be carried on the shoulders of only transport freight companies

Future directions

- The findings from this article gives a peek into what road haulage companies think of EFTs & AFFT. This provides a basic guideline for future actions to authorities, decision-makers and other stakeholders in ecosystem of EFTs & AFFT.
- With these findings, we have planned to conduct **more interviews** with a few more road haulage companies in Finland, who will be of different company sizes & at various locations in Finland.
- We also plan to conduct a **survey** across Finland, with more detailed questions than the ones asked in interviews, to quantify the measures for accelerating the implementation of EFTs & AFFT.
- With the findings from the new interviews & the survey, we will **delve deeper** into the psyche of road haulage companies and understand their perceptions of EFTs & AFFT.

Sources (partial list)

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Thank you! Kiitos!

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