Analysing usages of light commercial vehicles in situation for identifying the users’ needs.

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1. Introduction

Many employees drive during their work. Beyond the simple moving from point A to point B, the vehicle fulfils several functions (e.g. workshop, office). Our study aims to grasp the diversity of usages to be taken into account for the design of future vehicle. We focused on workers using Light Commercial Vehicle (LCV). After proposing a first definition of “situation of usage” and explain our methodology, we detailed, in this communication, a first case study. This allows identifying and analysing a first set of “situation of usage”.

Given the diversity of activities studied, it is necessary to define a relevant analysis unit for identifying and studying the usage of a complex technical system like the LCV. We propose to define the concept of “situation of usage”, relying on the instrumental approach on one hand (Béguin & Rabardel, 2000; Rabardel & Béguin, 2005), and on the concept of “setting” proposed by Lave (1988), on the other hand.

We call ‘usage’ a set of subject’s goal-directed actions involving all or part of the vehicle as mediator or object of its activity. The individual pursues a set of goals, sequentially or simultaneously, through interactions with different parts of the vehicle, using it as a system of instruments well adapted to different situations. For each new goal pursued, the subject selects and interprets some elements of the environment that he considers relevant as part of its activity and that will guide, but not direct, his usages strategies.

2. Method

After conducting exploratory observations of contrasted worker’s activities (e.g. baker, courier) allowing a first approach of LCV usages and the definition of unit analysis, the second phase consisted in conducting systematic observations of professional users. The highway traffic officers, whose activity is presented in this communication, constitute our first case study.

On two sites, we followed three highway traffic officers, throughout their working day, for three days each. The vehicle is equipped with synchronized cameras filming the road, the cabin and the cargo space. We then conducted “self-confrontation interviews” with each officer based on situations samples, enabling to specify the determinants of situation and its usages strategies.

Each case study was analyzed individually and systematically. To do this, we conducted a chronological activity cutting in situation of usage. For each, we focused on different parameters: interactions between the professional and his vehicle, professional’s verbalizations (spontaneous or provoked), vehicle function given by the professional, solicited instruments and determinants affecting these usages. This methodology allows to compare the same usage at different times of professional’s activity and identical usage present in professionals’ activities with different profiles.

3. Results

This methodology has enabled to build a grid of usages identification made of set situational variables influencing the LCV usages (e.g. travel organization type; the crossed environment) and their associated determinants. It allows: 1/ to highlight strategic differences in the vehicles usages; 2/ to identify similarities and differences of usages between the subjects.

For example, highway traffic officers manage various interventions on the highway (e.g. management of disabled vehicle, accident). To do this, they use vehicle to get to the intervention place and getting of it along the tracks. On three studied sites, highways present different characteristics (e.g. traffic density, emergency lanes size) influencing the officers’ vehicle access strategies. In the first highway, with dense traffic, officers
favored their access by opposed traffic doors for safety reasons. The other sites present lower traffic and narrower emergency lanes. Here, officers favored to park their vehicle as closely as possible to the safety barriers to not encroach on ways, and access their vehicle by the driver door, traffic allowing that.

4. Conclusion

Through the concept of "situation of usage" we introduced a unit of analysis allowing both to identify and analyze the diversity of existing usages and to bring out structural determinants. Systematic methodology, permit to compare them and to define what could be invariant and common, and thus generalizable. In the end, this research contributes to define a typology of usages intended to the designers of future vehicles, in order to enable them to identify users’ current needs and potentially to anticipate their usages.

References