

# ACCEPTABILITY OF DRIVING AN EQUIPPED VEHICLE WITH DRIVER RECORDER: THE IMPACT OF THE CONTEXT

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## ABSTRACT:

The objective of this research conducted in the S\_VRAI project [saving lives by road incident analysis feedback] is to present results about the acceptability to equip vehicle with an EDR [Event Data Recorder] without feedback. 5 focus groups were conducted in 2 different services of the French civil servants. The results show the importance to take into account the societal and professional context when studying the acceptability of an EDR.

## 1. INTRODUCTION

If studying the technical aspect of a new tool is essential, to study its acceptability is relevant. In fact, an automated system that is effective but not acceptable will not be used by the users. Some authors distinguish the social acceptability and the social acceptance [1]. The social acceptability is about the attitudes on a subject without the use of it. The acceptance is about the attitudes on a object on which the participant has an experience.

The objective of this research conducted in the S\_VRAI project [saving lives by road incident analysis feedback] is to present results about the acceptability to equip vehicles with an EDR without feedback. The data concerning the acceptance of driving an equipped vehicle are being analysed so, at this time, we are not able to present them. In this research, insofar as, the participants have not yet driven an equipped vehicle, we are talking about the acceptability.

### 1.1 *Social acceptability of an EDR without feedback*

Few works [2;3] have been focused on the acceptability of an EDR without feedback on the driving behaviour, which gives to this work its innovative aspect.

#### 1.1.1 *Lack of privacy*

The lack of privacy is the main element of the acceptability of the EDR. Concerning professional drivers, a lot of researches have been conducted on the impact of this system on the accident or about its impact on driving behaviors [4-8]. However, a few works have been conducted on its acceptability while « *the most important challenge in applying on-board safety monitoring to commercial motor vehicle driver safety management is likely to be achieving driver acceptance* » ([9], p. 29). So according to some works, for professional drivers, this technology increases their perceived stress [10]. It is a lack of privacy [9;11] that could decrease the driver judgement and modify his driving behaviour [9]. « *The measures will be acceptable if they are perceived as efficient and fair. At the opposite, the acceptability will be weakest if the measures are perceived as a lack of privacy* » [3 ; p.vii].

#### 1.1.2 *Volunteering*

Even if the volunteering is often quoted in several theoretical models about the acceptability of a new system [12;13], it is not studied in the researches on the acceptability of the advanced driver assistance systems. This is perhaps because using these new technologies is based on an individual choice, and so, the volunteering is not a relevant element to take into account.

About the EDR acceptability, we can make the same comment, volunteering is not studied very often. As we saw in the last paragraph, in the S\_VRAI project, the EDR is used in a professional context in a way to improve professional drivers behaviours. The drivers do not have choice and so the volunteering is not

relevant. However, a mandatory tool with a low acceptability will generate circumvention and avoidance strategies (see the commitment theory, [14;15]).

### **1.2.3 Social context**

It should be wrong to consider that the acceptability of a tool is based on a single relation between the tool and its user without taking into account the social context (colleagues, friends, societal organization, ...).

So the elements quoted in the international literature do not take into account the context of use of the EDR. But, the importance of the social cognitions that permits a better understanding of the acceptability is defended by several authors [16;17].

So according to the explanatory levels [18], the inter-individual relations are important concerning the study of social influence. The social norm influence is a good illustration of this analysis level. Some authors distinguish two types of norm: a subjective descriptive norm (« what the others do ») and an injunctive subjective norm (« what I believe the others expect me to do »)[19]. We can consider that a tool will be more acceptable if other use it and if they agree with it.

Some authors add another element concerning the social organization : « *This organizational level will permit to take into account the specific context in which the individual is* » ([17], p.391). So we could suppose that the acceptability of a tool, in a professional context, is dependent on the organization of the company but also on the corporate culture. This last term is defined as a " global vision of the organization and its objective " [20].

The objective of this research is to study the acceptability of the EDR before civil servants have used it. For doing this, we based on the literature on the subject (lack of privacy, ...) and we make a focus on social aspects (professional context, societal context) .

## **2 METHOD**

The S\_VRAI project aims to equip fifty-four vehicles with an EDR called EMMA, that records data (speed, acceleration, geolocate data...) before and after an incident happens. However no feedback on the driving behaviour is made in this step of the project. The drivers are all volunteer to participate to the project and the data are anonymized before being analysed.

To study the social acceptability, we based on the focus group method, that can bring informations on an unknown subject. This qualitative method has already been used by several researchers about the acceptability of the EDR [2] but also concerning the acceptability of new technologies [21].

Two different structures of the French civil service agreed to equip some of their vehicles with drive recorder. The first one (called A) corresponds to governmental entity and the second one (called B) is a local authority. In this research we are talking about civil servants for which driving is not a main element of the job, even if they often drive to go to meetings for example.

The focus group (50-85mn duration) take place on time work and the participants gave a written consent to participate for discussion to be audio-recorded. A semi-structured interview format using open-ended questions was used, providing the opportunity for exploration on concepts of interest, as well as for free-flowing conversation amongst participants and expansion of ideas within group conversation.

27 civil servants participate this research, 22 in the entity A, with 4 non-volunteer to drive an equipped vehicle and 5 in the entity B. In the structure A, 3 focus groups made up of workers willing to drive an equipped vehicle (N=5, N=6, N=7) and one focus group of workers that refused to drive an equipped vehicle (Entity A-Non volunteer; N=4) were conducted. Groups were intentionally structured to be homogenous in

nature to encourage discussion amongst people with same hierarchic level. So the managers (Entity A- volunteer-M) were not mingled with their employees (Entity A- volunteer). In the entity B, one FG was conducted with all the respondents on the same hierarchical level (Entity B;N=5).

### 3 RESULTS

#### 3.1 Differences between the 2 structures : volunteering and anonymization

The main results of this research are about the differences between the two entities and about the impact of the context on the acceptability of the EDR.

As mentionned at the beginning of this article, all the participants to the project volunteer to be involved and all the data are anonimized before being analysed.

##### 3.1.1 Volunteering

For, the respondents of the structure A, volunteering is a non-negotiable element of the acceptability to be involved in the project, its lack could justify to refuse to be involved. However, for the respondents of the second entity, the volunteering is not important in a professional context, they consider that they have to apply the rules.

*Entity A-Volunteer : I think that it is essential to the acceptability, because it is true, if it was imposed...  
Entity B :It is a vehicle in a professional context, so we obey*

The non-volunteer respondents (that are all in the entity A) speak about handling. According to them, it would give the false idea that the direction have already taken the decision to be involved in the project.

*Entity A-non-Volunteer : They always give us the false idea that we are involved in the decision*

##### 3.1.2 Anonimization

If most of the respondents trust in the anonimization procedure, the two structures do not agree about its interest. So for the respondents of the entity A, the data anonymization is an essential element of their acceptability to be involved in the project, while it is not the case for the respondents of the entity B.

*Entity A-Volunteer : If the anonymization was not guaranteed, we will be against the project  
Entity A-Volunteer : We would not agree to be involed*

**Speaker : If it was not anonimzed, would you be a volunteer ?**

*Entity B : Yes*

*Entity B : Yes*

#### 3.3 Context : professional and societal context

As the respondents mention that they speak about the project neither with their colleagues and their line-hierarchy, and nor with their relatives, we will focus on the general rules of the entity where the respondent works.

##### 3.3.1 Professional context

In the entity A, the implementation of the projet is made at the same time as efforts to prevent abusive professional practices. Only the non-volunteer to participate to the project say that the reason why they refuse is because it is an other way to control their behaviours. The volunteers of the entity A highlight a higher contrôl of the travels but they adapt themselves to this in informing their hierarchy when they make a light twisting to the rules.

*Entity A -non volunteer :They worry about the fact that peole do less work as possible, they do not trust on their employees.*

*Entity A- volunteer-M : The management say we can not do that, [ go back home after a professional travel with a professional vehicle] or we have to say it in advance but they do not say anything at the end.*

The implementation of the project is made at the same time as the implementation of GPS in fleet of vehicles in an other public entity. In each focus group, the event was mentioned. For this entity, the objective was to be more effective, in knowing where the employees are, they could tell them to go in a specific areas if needed. The employees did not agree such a measure, they had the feeling of being contrôlé so they made protest and they, even, confined their manager. But for the participants of this research, this has nothing in commun with this research project, insofar as, in the S\_VRAI project, the data are anonymized.

*Entity A-Volunteer : They feeled control*

*Entity A -Volunteer : It was in real time, it was not anonymised...*

*Entity A-Volunteer-M : It was not a scientific project.*

### **3.3.2 Societal aspect**

The institutional aspect where the automatized systems are implemented has to take into account when we make an acceptability study. So in France, the CNIL [National Commission on support innovative and personal liberties] play a protective rôle of the French people privacy. Its objective is « to protect personal data, support innovation, preserve individual liberties » (<http://www.cnil.fr/english/>; 31 august 2013) The respondents put their trust in this entity and it is an important element of their acceptability. So the CNIL assure them that their privacy will be respected.

*Entity A -Volunteer : The CNIL protects*

*Entity B : If the CNIL decides to put some limits, there will be respected whatever the circonstances.*

## **4. DISCUSSION**

The acceptability of an automatic system is not an exclusive relation between the user and the system but it needs to take into account the social organization in which the user is.

The main aspect of the work is about the importance of the context. So according to some authors [17], that write that the organisational context is an explanatory factor of the acceptability, we show in this research that the professional context has an impact on the acceptability.

So the acceptability of a new tool is linked to the professional identity of the society. So, between the repondents of the entity A and those of the entity B, the frontier is not the same. The volunteering and the data anonimzation are perceived by the respondents of the entity A as necessary elements to their willingness to be involved in the project, it is perceived as optional for the respondents of the entity B. We explain these differences by a « *different firm culture more precisely by a different « global vision of the organization and its objective »* [20].

To the explanatory levels developped by Doise [18] and completed by Terrade et al. [17] , we would add an other one, the societal context. This idea is quoted in other French works about new technologies, the researchers highlights that for French people, there is « *a strong feeling of a control paradigm added with a societal context, a feeling that French government control everyone* » ([22]; p.7). Insofar as the CNIL is a French entity that protect the individual liberty and in which the participants trust, if the CNIL give its consent to the S\_VRAI project, it assures them that their privacy will be respected. So, we can see that the societal organisation, here the CNIL, has an impact on the acceptability.

This research is the first one made in France on the acceptability of an EDR without feedback. Our objective was to show that the acceptability of an automated system is much more complex than a relation between the system and its user even if it is what is made on most of the researches on the acceptability of new

technologies in the road safety field. To get the all complexity of the acceptability, we need to take into account the social, professional and societal context.

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