

# Acceptability data – what should or could it predict ?

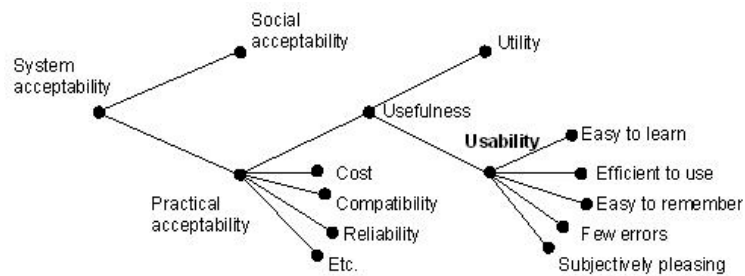
In the context of vehicle safety systems

Dr Samantha Jamson

- Brief overview of models of acceptability
- Commonalities between the models
- Issues of acceptability, acceptance and take-up
- Data collection in a Field Operational Test
- Performance indicators and analysis

## Models of acceptability #1

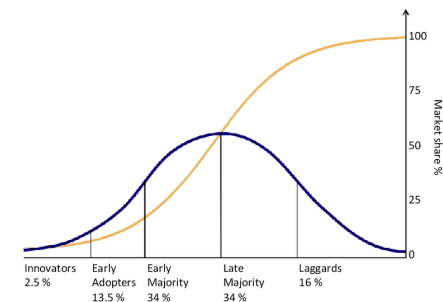
- Neilsen’s (1993) framework of acceptability is rooted in usability engineering – “**can** an individual use the system?”



## Models of acceptability #2

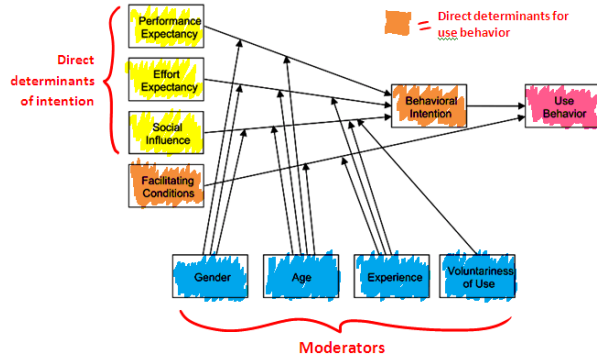
- Whereas Rogers (1995) models patterns of adoption “who **will use** the system?”

With successive groups of consumers adopting the new technology (shown in **blue**), its market share (**yellow**) will eventually reach saturation level.



## Models of acceptability # 4

- UTAUT (see Emili's presentation)
- Sought to synthesise various models of acceptance



## Comparison of the models

- Several key constructs overlap
- Perceived usefulness and usability feature regularly
- Several models include an intervening variable which reflects an individual's *intention* to use a system or product
- Other variables may include risk-taking, sensation seeking, complacency, locus of control, technological aptitude, access to new technologies, travel patterns
- Vlassenroot et al. (2008) provide a good overview of the factors believed to influence acceptability of in-vehicle systems

## euroFOT project overview

- Large-scale field operational test for evaluating the impact of active safety systems in vehicles
- Apply a **common** European approach for Field Operational Tests
- Investigate performance, driver behaviour and **user acceptance**
- Assess the impacts on safety, efficiency and the environment



FCW	Forward Collision Warning
ACC	Adaptive Cruise Control
SL	Speed Limiter
BLIS	Blind Spot Information System
LDW	Lane Departure Warning
IW	Impairment Warning
CSW	Curve Speed Warning
FEA	Fuel Efficiency Advisor
SafeHMI	Safe Human Machine Interaction

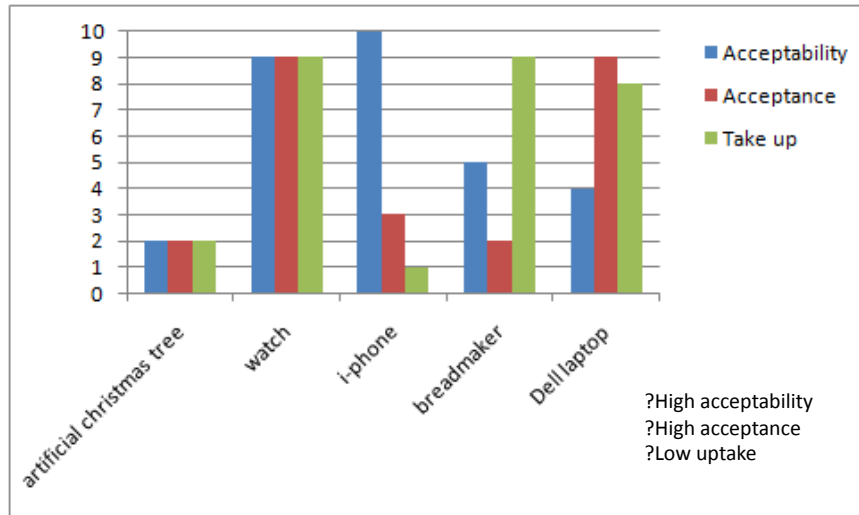
## What are we trying to measure?

- How much a systems is liked?
- How much it would be used?
- How likely someone would buy it?

*Acceptability*  
*Acceptance*  
*Take up*  
*(purchasing)*



## ...some hypothetical examples



## Why should we be trying to predict or measure acceptance?

- Impact analyses require information on take up and use.
- UK ISA project - linear increase in ISA impact (accident reduction) with increasing penetration.

Penetration	ISA Variant		
	Advisory	Voluntary	Mandatory
20%	0.5%	2.4%	5.8%
40%	1.1%	4.8%	11.6%
60%	1.6%	7.2%	17.3%
80%	2.2%	9.6%	23.1%
100%	2.7%	12.0%	28.9%

- But these penetration rates are hypothetical and depend, of course, on take up and use (use- for a voluntary system)

## Estimating system use #1

- Can use Field Studies (FOTs) – easier for some types of systems than others
- e.g. Voluntary ISA in UK ISA project

	DSQ score	Actual speed	System use	Age
Acceptability	-0.30	-0.44*	0.52*	0.22
DSQ score		0.46*	-0.20	0.10
Actual speed			-0.43*	0.18
System use				0.09

- but more difficult for other systems, (e.g. FCW as it may be silently active and only activate infrequently)

## Estimating system use #2

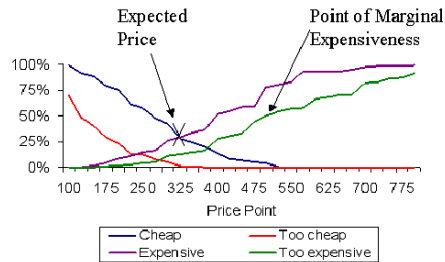
- Can also use off-line techniques, such as stated preference to gauge driver's use of a system
- UK project used SP to establish the types of incentives that would tempt drivers to buy and use ISA
- Some of the sample had such strong opposition to ISA that no reasonable discounts or incentives would lead to them buying or accepting such a system
- but there is also a large part of the population that, if given the right incentives, would be willing or even keen to equip their vehicle with an ISA device.

*Deal or no deal: Can incentives encourage widespread adoption of Intelligent Speed Adaptation devices?*

(AAP, appearing soon!)

## What are we trying to measure?

- Or do we simply want to know if a driver would buy a system
- Modified van Westendorp Procedure (price sensitivity)
  - At what price is the product so cheap that the product quality is questionable? [Too cheap](#)
  - At what price is the product a bargain? [Cheap](#)
  - At what price does the product begin to seem too expensive? [Expensive](#)
  - At what price is the product too expensive to consider? [Too Expensive](#)



(OEMs interested of course but they are also keen to know the reasons for the dislike)

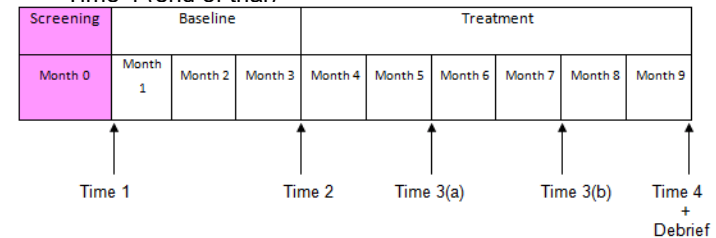
## Measure everything.... discover something!

- Subjective mental workload
- Perceived usefulness
- Perceived satisfaction
- Perceived social acceptability
- Affordability
- Trust
- Perceived effectiveness
- Perceived ease of use
- Self report misuse/abuse
- Social influence
- Behavioural intention
- Experience with technologies
- Attitude to target behaviours
- Demographic data
- Personality
- Travel patterns
- Driving behaviour
- User practice



## Back to the euroFOT project: Data collected

- Many standard performance indicators.....
- Questionnaires : A core questionnaire was produced, with flexibility to add (but not delete!) items
  - Time 1 (prior to trial start)
  - Time 2 (end of baseline, prior to system exposure)
  - Time 3 (a,b,c....) during system exposure, at numerous points
  - Time 4 (end of trial)



## The answer ??

- We want to measure all of them and more importantly see if and how they inter-relate.
- Does acceptability influence acceptance ?
- Does acceptance (use) influence acceptability ?
- What is the relationship between acceptance, acceptability and reported likelihood of take up?
- Are there key facets of acceptability (e.g. Effectiveness, usability) that are the main predictors?

Questions?



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