



# **Salience and Acceptance of Security Measures: Case Study of Airport Security Measures**

Model validation for societal issues

**Petra Guasti and Zdenka Mansfeldova**

Institute of Sociology, Academy of Sciences of the Czech Republic

Anadolu University, 27<sup>th</sup> February 2014

# Structure of Presentation

- 1. Introduction**
- 2. WP4 Objectives and Achievements**
- 3. Media Analysis 2010-2013**
- 4. Salience of Security Measures: Acceptance of Airport Security**
- 5. Conclusion**

# 1. Introduction

**Work package 4 „Security and Society“** studies citizen’s reaction to the various risks and their acceptance of proposed security measures – linking risk and security in assessing their mutual trade-offs for citizens.

The interaction between security technology and public attitudes in part determines the effectiveness of different policy approaches and regimes. Risk-based models offer a means of adapting to new threats, but it is considerably difficult to determine the correct auditing mechanism that sufficiently reassures stakeholders. The economic and public policy environments play an important role in determining the optimal regulatory structures in this case.

## **The main objectives of WP4 are:**

To conceptualise security and risk as a social phenomenon and to analyze their mutual interplay in public opinion and attitudes;

To identify policy interactions between policy makers, industry (stake holders) and citizens (consumers), specifically:

- public perception and attitudes to risk;
- the risk tolerances and consumer-demand for security;
- values citizens attribute to security;
- communication between policy makers, stakeholders and citizens in the area of security and risk.

- With respect to public attitudes, WP4 contributes significantly to the overall SECONOMICS framework. It presents an innovative research-focused analysis of public attitudes towards the various security issues highlighted in the project, drawn from a study of the media's own published articles.
- Security has been defined as a subjective phenomenon that changes within society. Information on people's understanding of security issues (e. g. crime, terrorism, natural or man-made disasters), their perception of security as well as the relevant facts about the risks and dangers they face and perceive may vary according to the level of assessment, be it public or personal (individual).
- Furthermore, people's feelings of insecurity and their perception of the importance of security can be different in diverse demographic groups. Persons who are amongst best protected and most secure in the society are likely to have expectations of security much higher than poorer, less protected persons.

## 2. WP4 objectives and achievements 1/2

- In the first period of the project we did an extensive secondary analysis of the risk perception and risk acceptance across and outside the European Union using a variety of quantitative empirical data from international surveys as evidence. The analysis offered general overview of citizens' perceptions and attitudes toward risk and security, conditionality of these, as well as attitudes to the various trade-offs, as demonstrated on the tension between freedom and privacy on one hand and security on the other hand.
- Using number of cross-national surveys, the study comparatively assessed number of issues connected with perception of risk and threats by citizens of multiple countries.
- In recent years public awareness of security issues has grown exponentially, following numerous scandals which indicate numerous governments prioritize security over privacy and civil liberties and do so in a secretive manner often on (or even beyond) the verge of existing rules and regulations.

- Given the limited availability of relevant data, alternative strategy was outlined in the conclusions to obtain own data directly related to research needs of the project.
- As a result we opted for media as source of information and an important instrument of public opinion formation (both in positive and in negative sense).
- Collection of qualitative data on the dilemmas between security and freedom, from the perspective of citizen and her acceptance of policy-decisions, legislation and measures as a response to existing and future threats, directly related to case studies provided not only new and unique perspective, but also strengthened the overall cohesion of the project.

*Seconomics* project seeks to tackle the following questions:

- How do media actually frame the implications of security and security technologies within the three SECONOMICS case studies?
- What are the perceived trade-offs between security and privacy? Do questions of security dominate? Who are the proponents and opponents of security vs. freedom (privacy)?
- Has the media coverage of terrorism made the public more sensitive to the issue of security? And, if so, how are the (security) threats perceived and discussed by the media?
- What is the role of social media in shaping public opinion and framing security dilemmas?
- Do new technologies offer some answers to security issues, or do they represent new risks?

## What we did so far?

Based on series of consultations with our partners from case studies WP1, WP2 and WP3, three current media salient themes were identified as relevant for comparative qualitative analysis:

- 3D body scanners, for the airport security case study;
- Stuxnet, for the critical infrastructure security case study, and
- CCTV camera systems, for the public transport security case study.

The media analysis consisted from following steps:

Development of unique **SECONOMICS** conceptual and methodological instrument for qualitative comparative analysis of security issues in the media;

Organization of **Prague Graduate School in Comparative Qualitative Analysis** (May 2013), training of 11 students from 9 countries, using the SECONOMICS analytical instrument;

Creation of **SECONOMICS Media Corpus** of over 2.800 media articles on three selected security issues - 3D body scanner, Stuxnet and CCTV cameras - in 10 countries and almost 400 articles from four expert security blogs provides an extensive material for studying perception of security and acceptance of risk in different cultural complex;

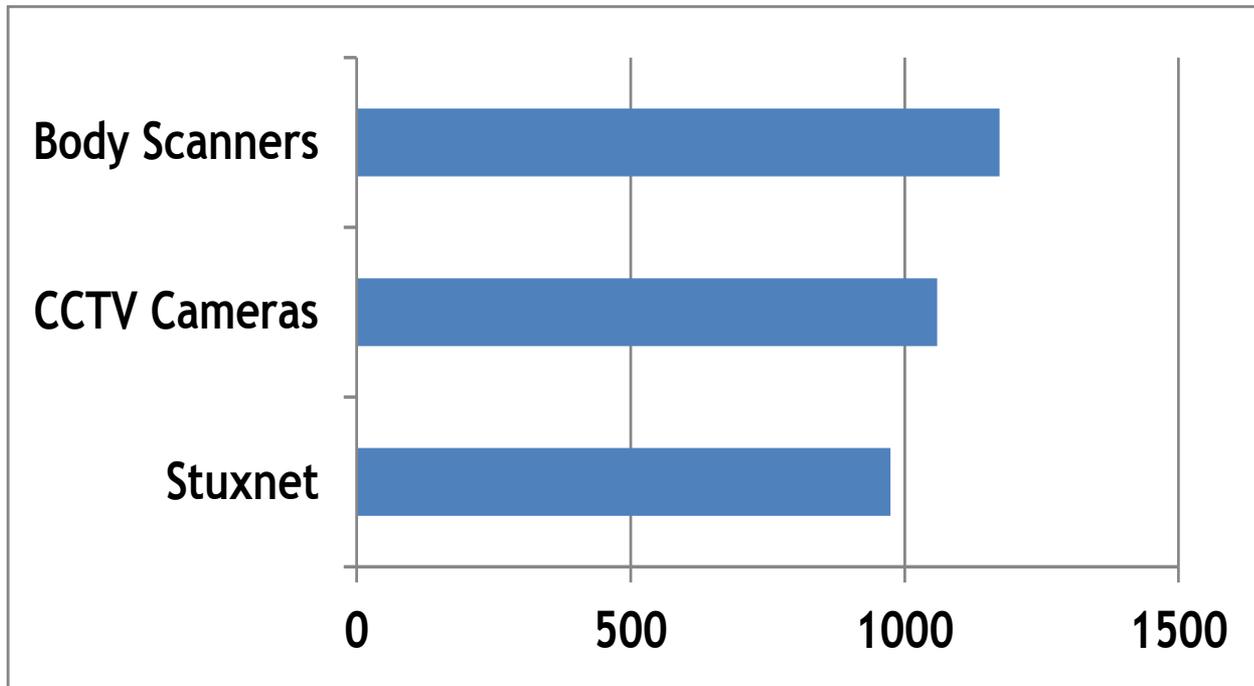
**Construction of Salience Index and Model of Public Acceptance of Security Measures** utilized both for model validation as well as to introduce sociological dimension into SECONOMICS models.

### 3. Media Analysis 2010 - 2013

- The articles analysed in the study are all drawn from the period between January 2010 and April 2013.
- Each article was sourced from the two most circulated quality dailies (i.e. mainstream newspapers) in the following countries:
  - the old and the new EU member states of the Czech Republic, Germany, Italy, Poland, Slovakia, Spain, the UK;
  - as well as non-EU member states important in either shaping the global discussions of the selected issues (the USA), or
  - key in providing relevant cultural diversity (Turkey and Mexico).

- Additionally, four expert security blogs were selected to provide insight into the opinions of the security expert community, in addition to the opinions of the general population provided by the articles.
- The twenty national newspapers provided over 2800 articles for the given period.
- The expert blogs contributed approximately 400 articles.

Total number of articles related to 3D body scanners, CCTV cameras, and Stuxnet in 2010-2013 in all countries

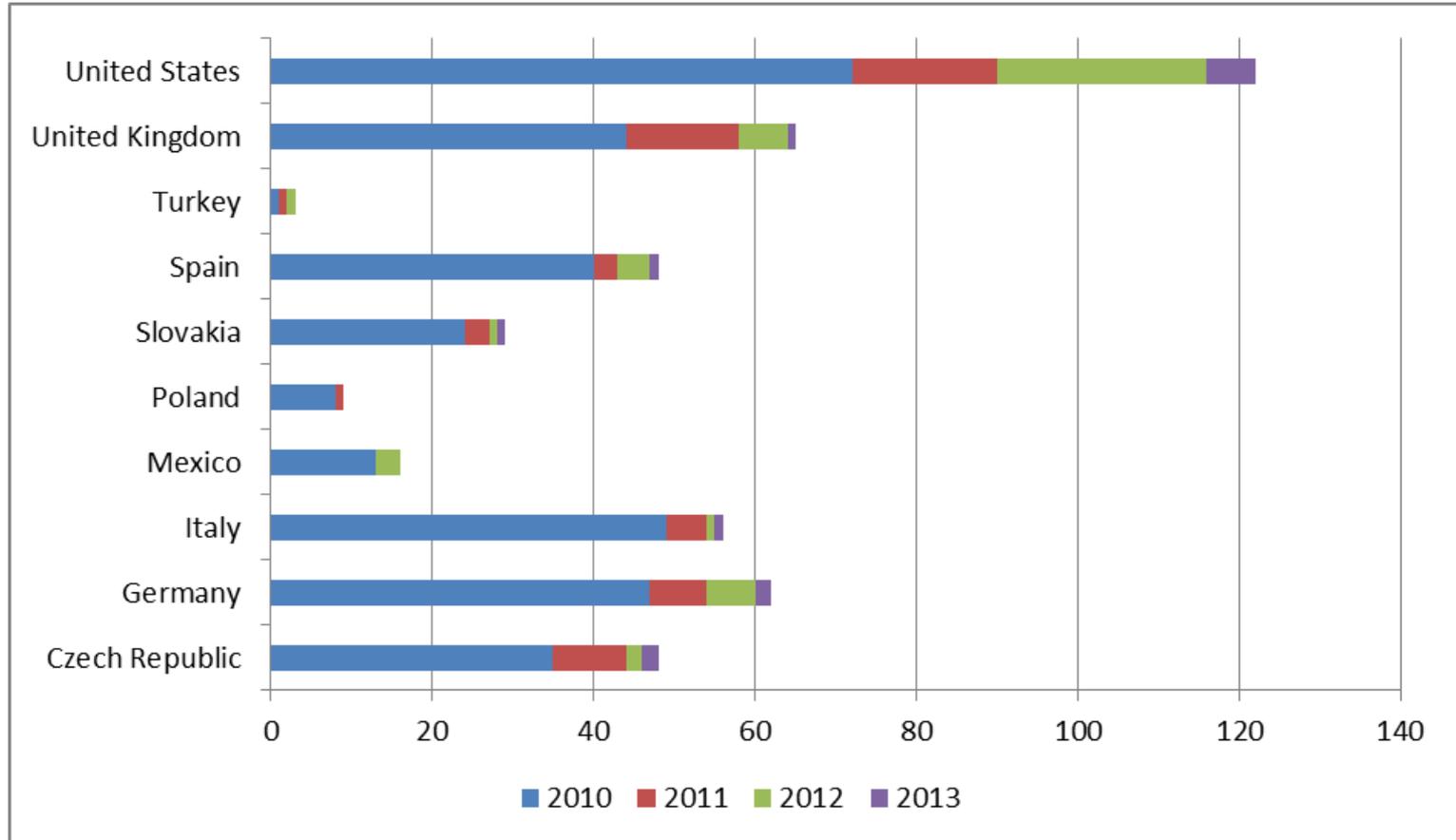


Source: Comparative analysis of the SECONOMICS ISASCR media sample

## Comparing Salience of various security issues

3/4

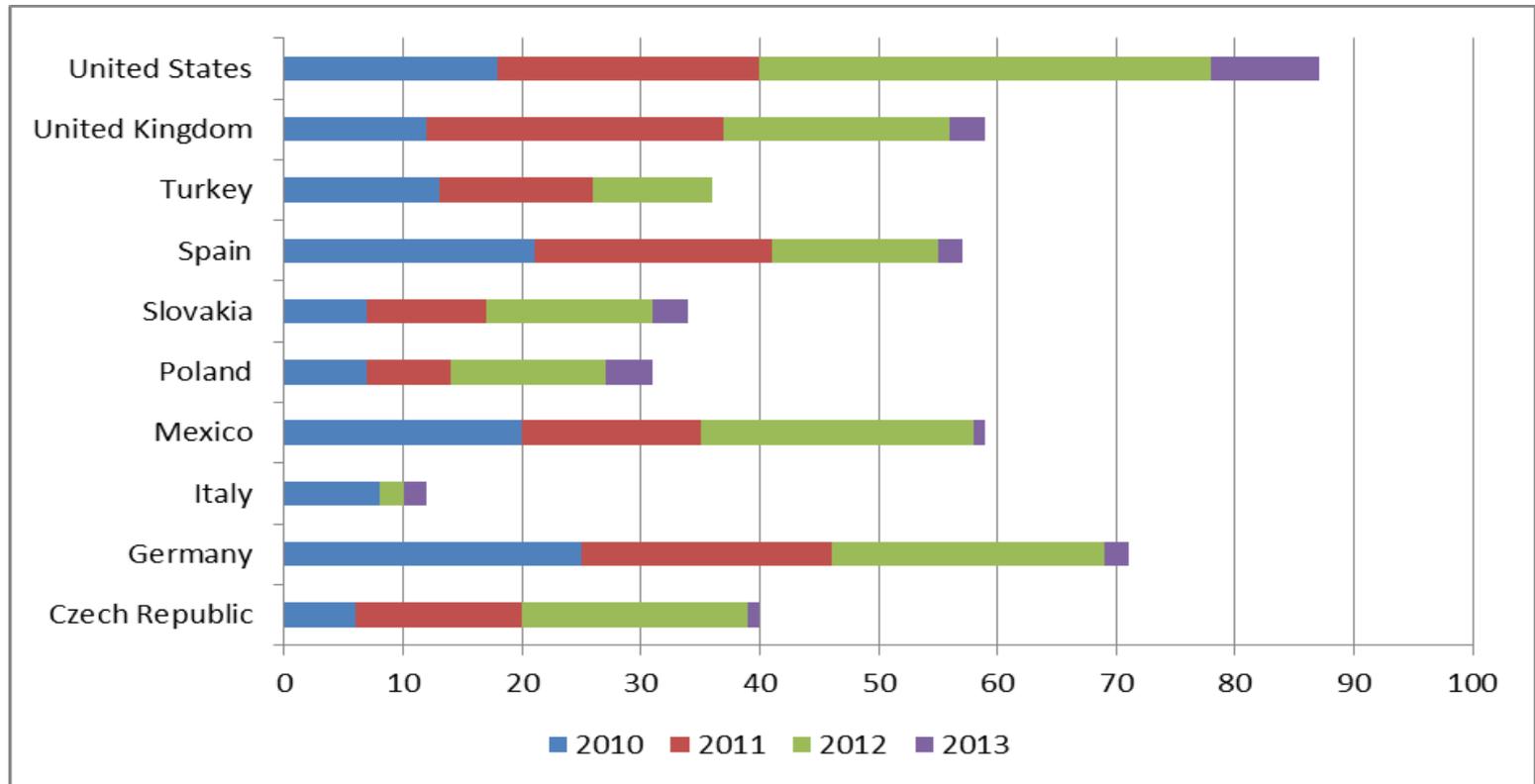
Figure 1. Salience of the 3D body scanner issue in the media between 2010 and 2013 (in N= number of articles)



## Comparing Salience of various security issues

3/5

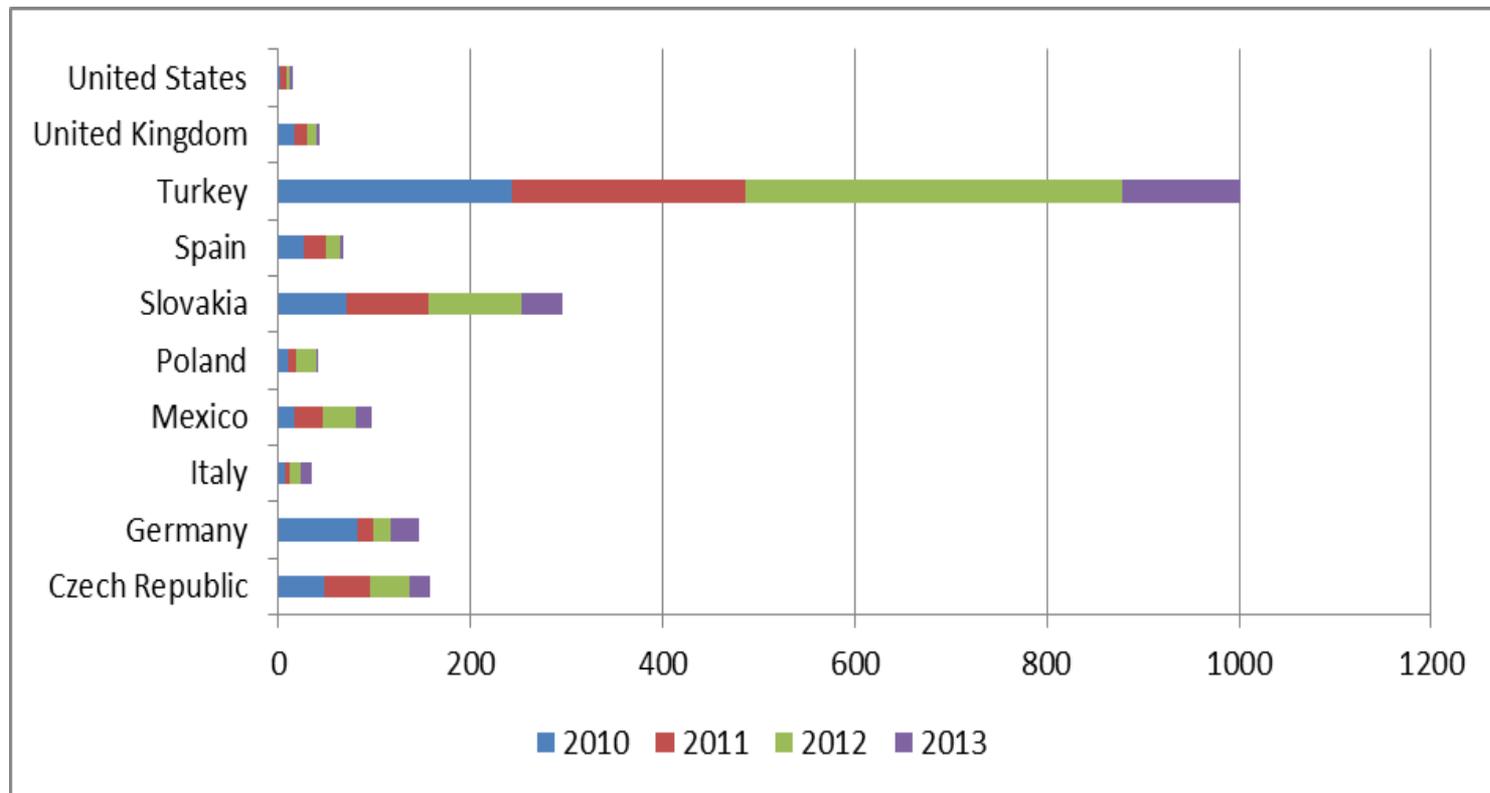
Figure 2. Salience of the Stuxnet issue in the media between 2010 and 2013 (in N= number of articles)



## Comparing Salience of various security issues

3/6

Figure 3. Salience of the CCTV camera issue in the media between 2010 and 2013 (in N= number of articles)



Source: SECONOMICS team, Prague

**Graph 1. Comparative Assessment of Salience of Security Measures**

<b>Salience / Measure</b>	<b>3D Body scanner</b>	<b>Stuxnet</b>	<b>CCTV cameras</b>
<b>Low salience</b>	Turkey Poland Mexico	Italy Poland Slovakia	US Italy Poland UK Expert blogs
<b>Medium Salience</b>	Czech Republic Slovakia Spain Italy Expert blogs	Czech Republic Spain Turkey	Mexico Spain
<b>High Salience</b>	US UK Germany	US Germany Mexico UK Expert blogs	Turkey Slovakia Czech Republic Germany

Source: ISASCR

Table 5: Dominant actors in the analyzed countries for CCTV cameras, Stuxnet, and 3D body scanners

Actors	CCTV cameras	Stuxnet	3D body scanners
Journalists	Spain Czech Republic Poland Slovakia Germany Great Britain USA	Spain Mexico Poland	Spain Czech Republic Poland Great Britain
Experts		Italy Germany Great Britain USA	Czech Republic
State institutions			Mexico Poland
Politicians	Italy		Italy Germany
Private company	Mexico	Czech Republic	
Transport Security Agency			Czech Republic USA

Source: Comparative analysis of the SECONOMICS ISASCR media sample

Note: More than one dominant actor in the country means that there were more actors with the same number of codes

## Findings I.

### 1. 3D body scanner

- most salient in **US, UK and Germany**;
- least salient in **Turkey, Poland and Mexico**;
- in terms of time 3D body scanners were most salient in 2010 and is gradually becoming less salient over time.

### 2. Stuxnet

- highest salience in **US, Germany, Mexico** and the **UK**;
- least salient in **Italy, Poland and Slovakia**;
- in terms of salience over time - Stuxnet issue was most salient in 2012 and is rather stable over time, with a slight drop in salience in 2013.



## Findings II.

### 3. CCTV cameras

- Turkey can be clearly identified as an outlier, as it contributes 1000 articles to the overall sample - caused by the frequent use of CCTV cameras, as well as its utilization by police during investigation;
- excluding Turkey, **CCTV cameras would still remain the most salient issue;**
- highest salience in **Turkey, followed by Slovakia, the Czech Republic and Germany;**
- the least salient in the **US, Italy, Poland and the UK.**
- the saliency of the CCTV camera issue is relatively stable over time with a subtle growth in 2013.



## Findings III.

- As a result of both global events (i.e. terrorist attacks) and domestic developments (both economic and political), the media debates in the studied countries each prioritized a specific aspect of national security.
- Countries that are generally more active on the international scene and/or have had a previous experience with domestic and international terrorism, are generally more exposed to (and hence concerned about) potential terrorist attacks.
- In these countries (the UK, the US, Spain, and Germany) security measures are high on the policy agenda, as demonstrated by the prioritization of body scanners in airport security and intensified CCTV use in counter-terrorism.
- In countries with no real danger of a terrorist attack by international extremist groups (Poland, the Czech Republic, Slovakia), there is a low policy interest in advanced and costly security devices, such as body scanners at airports and CCTV, are seen positively as a crime prevention measure.

## Findings IV.

- Still, developments in 2013 show that acceptance of security measures depends on the perception of these as both legal and legitimate, regulated by laws that maintain appropriate scrutiny.
- Hence the attempts of countries to justify installation of CCTV cameras as a crime prevention measure whilst seeking to enhance counter-terrorism backfires and deteriorates public trust, as seen in the UK case study.
- However, it is not only experience with terrorist attempts and threats that determines the attention paid by media to different security measures and tools. It is also the nature of these measures and tools and the extent of their applicability to the domestic context.

## Findings V.

This also influences the composition of actors who communicate with the public through printed media.

- In the debate about 3D body scanners, many different actors were involved. Here, the United States is indisputably the leading country in the debate about 3D body scanners and the remaining nine countries in the sample are rather reactive to the US in terms of actors, patterns of interaction, topics, and justifications.
- In the case of CCTV cameras, journalists dominate the debate; they were the most important actors in seven countries.
- Stuxnet represents a special case among the three selected topics, as it does not directly affect individual security, but national security. It is also a highly complex technical issue. Hence experts mainly speak about Stuxnet.

## Findings VI.

- We find that the media landscape, although fragmented and largely confined to the boundaries of nation-states, is undergoing a transformation as the importance of the international context grows.
- At the same time, the media is shifting from a focus on security threats to an awareness of the possible trade-offs of security measures in terms of health, privacy, freedom, and civil liberties.
- **Security related-issues, such as surveillance, the right to privacy, and that right's protection, are not clearly defined in static terms.**
- **Rather, their perception is influenced by the security context, mass media, cultural variables, laws, and particular context of specific state.**
- **Simultaneously, the public is becoming more sensitive not only to threats but also to the costs of security.**

## 4. Saliency of Security Measures: Acceptance of Airport Security

In order to gain better understanding of saliency and acceptance of security measures related to air transport ISASCR (with important contribution of its WP 1 partners Anadolu University and Deep Blue) underwent following research connecting airport security and social acceptance:

### (1.) **IS AS CR Media Dataset**

IS AS CR together with a team of young researchers collected and analyzed media articles from 2010-2013, focusing on two security issues - 3D body scanner, CCTV cameras, (Stuxnet seems only marginally relevant to the airport case);

### (2.) **Anadolu University Passenger Survey**

Unlike in the case of Barcelona metro, where passenger data were available to analyse the saliency of selected security measures, no such data are available for the airport case. Instead the team at Anadolu University prepared and collected passenger survey (January 2013, random sample of 904 passengers, of 82 nationalities at the International Terminal of Ataturk Airport in Istanbul). The analysis of the Anadolu Survey data, offer unique and important snapshot into the saliency of security measures present in airports;

### (3.) **Modelling effects of social acceptance on security measures in airport case study**

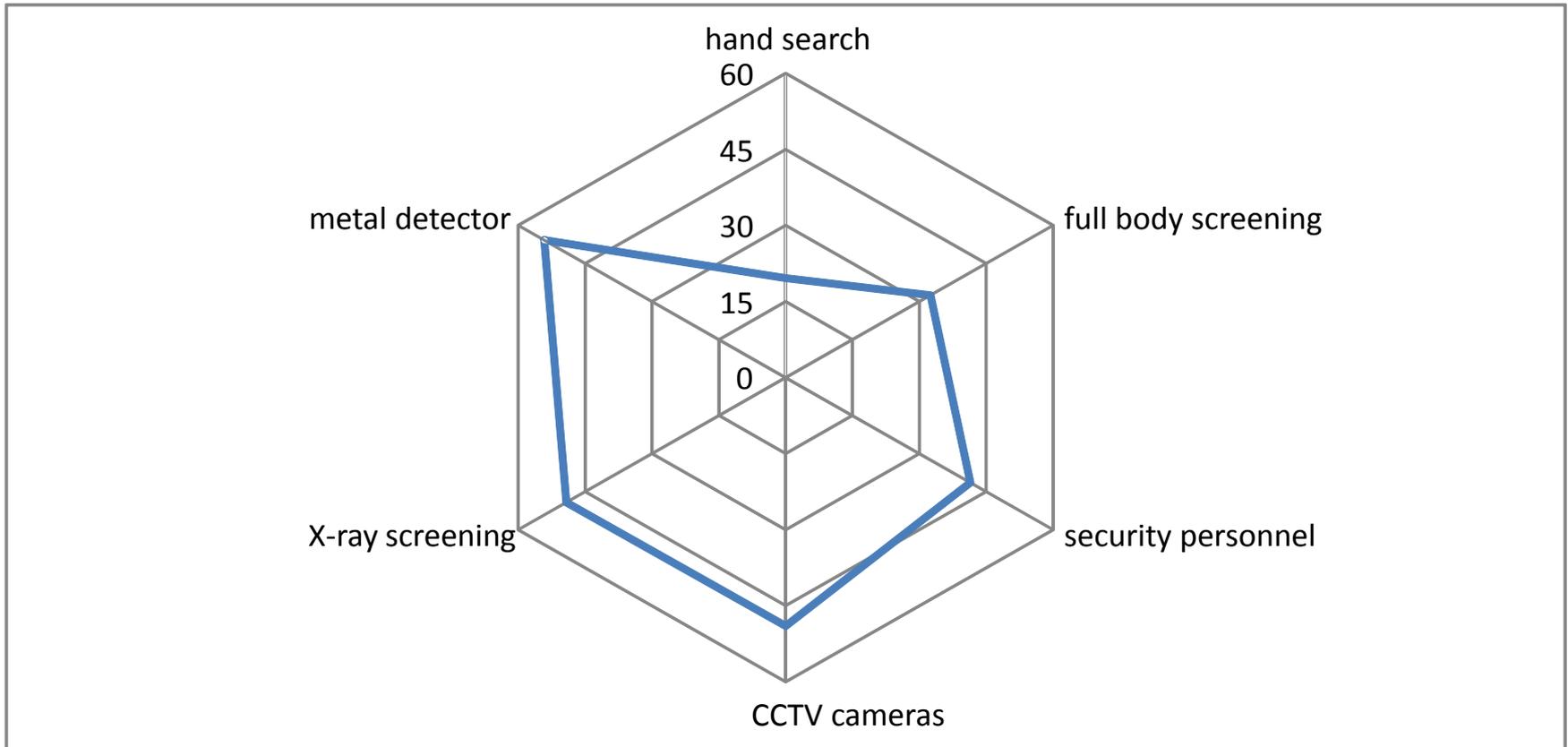
ISASCR together with WP 1 partners Anadolu University and Deep Blue further enhanced conceptual model of social acceptance of security measures developed by IS AS CR connecting airport security and social acceptance.

In airport case study we focus on salience and negative salience of security measures as well as on perceived (subjective) setbacks of security measures. First let us look at the general salience of security measures (the analysis is based on passenger's indication of security measure as important during security procedure, figure 4). Among the security procedures, six general salience clusters can be identified, first the most salient security measures – led by metal detector (over 54 %), followed by X-ray screening and CCTV cameras; secondly, medium salience of security personnel (over 41 %) and full body screening (i.e. use of 3D body scanner); and low salience of hand search (almost 20%).

### **Defining Salience**

→ **For the purpose of this study, salience is defined as public perception and reception of security issues and more particularly of security measures; for this purpose salience signifies the degree of acceptance (positive salience) and the degree of rejection (negative salience).**

Figure 4. General salience of security procedures



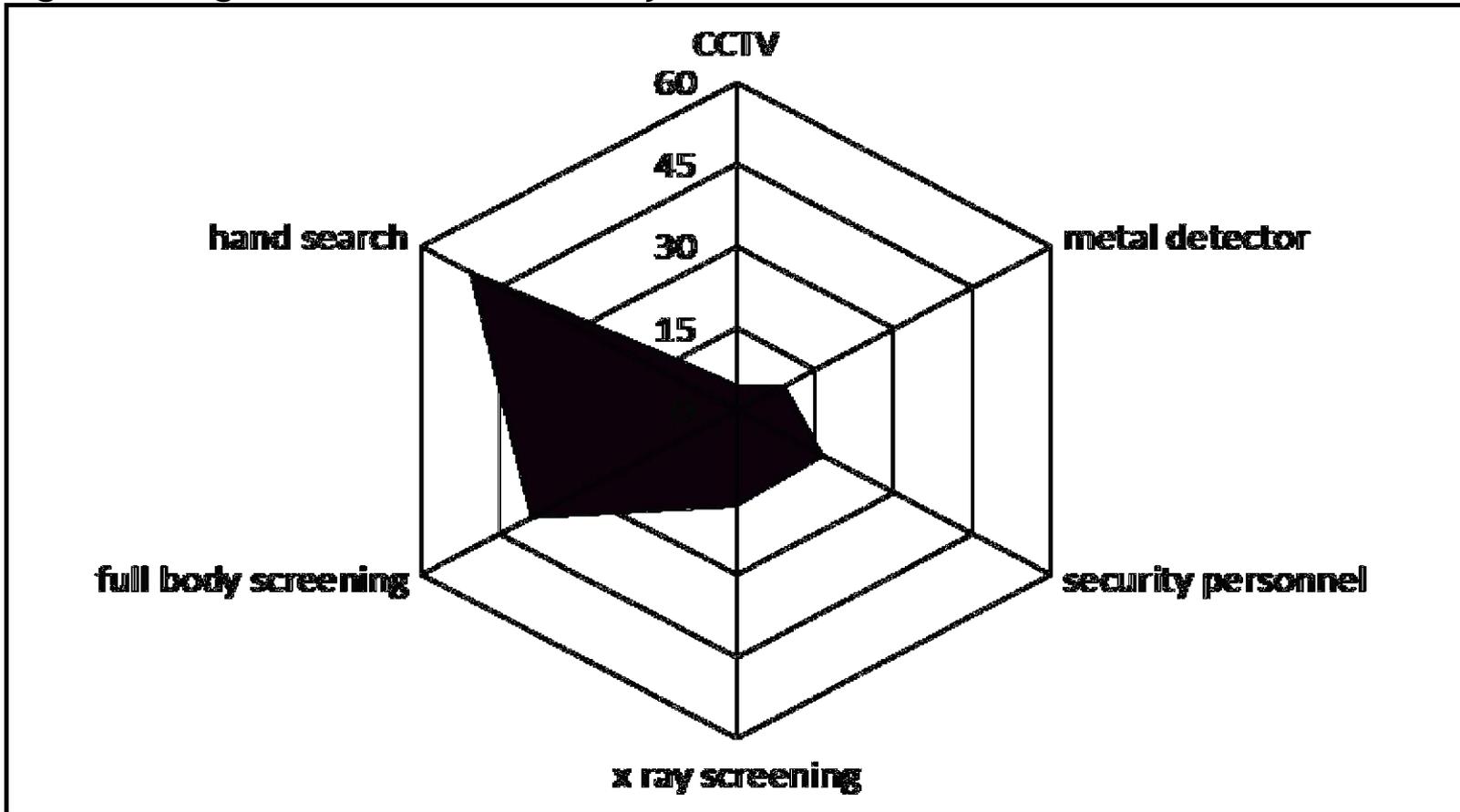
Note: N= 869

Source: Anadolu University

In the analysis of this question, we find significant differences based on socio-demographic variables such as:

1. age (passengers between 20 and 40 years of age are view security measures as more salient),
2. gender (male passengers tend to view security measures as more salient, as compared to their female counterparts),
3. religion (Christian and Muslim passengers are on average more sensitive to security measures than passengers belonging to other religion or no religion) and
4. education (the higher the education the higher salience of security measures).

Figure 5. Negative salience of security measures



Note: N= 872

Source: Anadolu University

In terms of negative salience (based on passengers' subjective evaluation of security measures as disturbing), three clusters of negative salience can be identified

1. high negative salience of hand search (almost 51 %) followed by full body screening (39 %);
2. medium negative salience of X-ray screening (more than 17 %) and security personnel (16,5 %); and
3. low negative salience of metal detector (9 %) and CCTV cameras (almost 5 %).

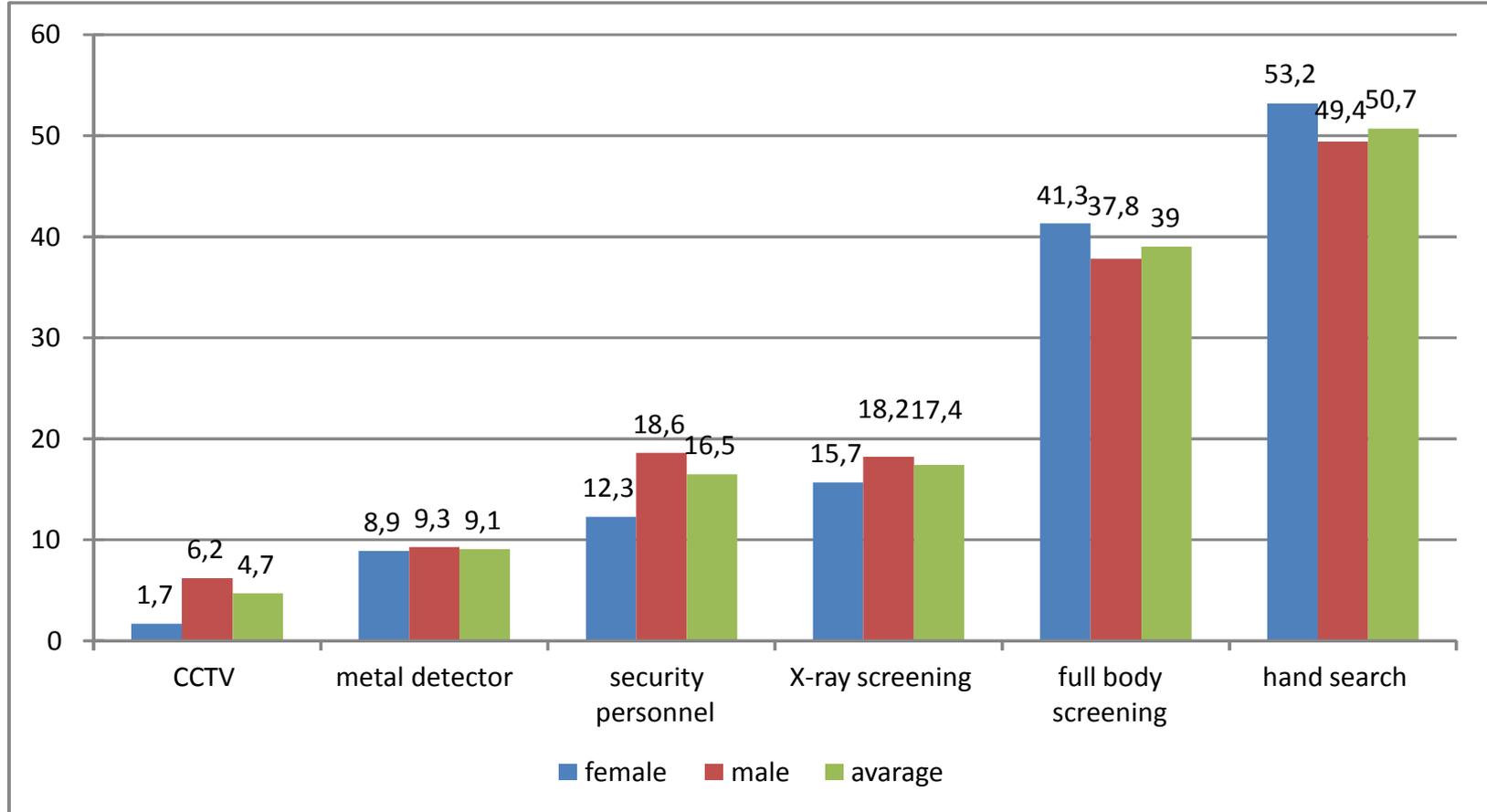
Looking at the clusters of negative salience, it is clear that the degree of negative salience reflects the degree of perceived intrusion into personal and even physical sphere of passengers – **the most negative being hand search presuming physical contact between passenger and security personnel, followed by screening by machine (viewed as more impersonal, however clear distinction is between 3D body scanner which has more than double the negative salience of X-ray screening)**, to a relative high acceptance (low negative salience) of non-contact security measures such as CCTV cameras and metal detector.

In this respect negative salience is significantly influenced by cultural differences – different cultures have diverse conceptions of private sphere and of the body. In terms of socio demographics, similar patterns as in general salience can be found in the case of negative salience.

Like in general salience we find significant differences based on socio-demographic variables such as

1. age (passengers between 20 and 40 years of age express stronger negative salience than their younger and older counterparts),
2. gender (male passengers tend to view security measures as more negatively salient, as compared to their female counterparts),
3. religion (Christian and to lesser degree Muslim passengers express on average more negative salience than passengers belonging to other religion or no religion) and
4. education (the higher the education the higher the negative salience of security measures expressed by passenger).

**Figure 6. Gender differences in negative salience of security measures**



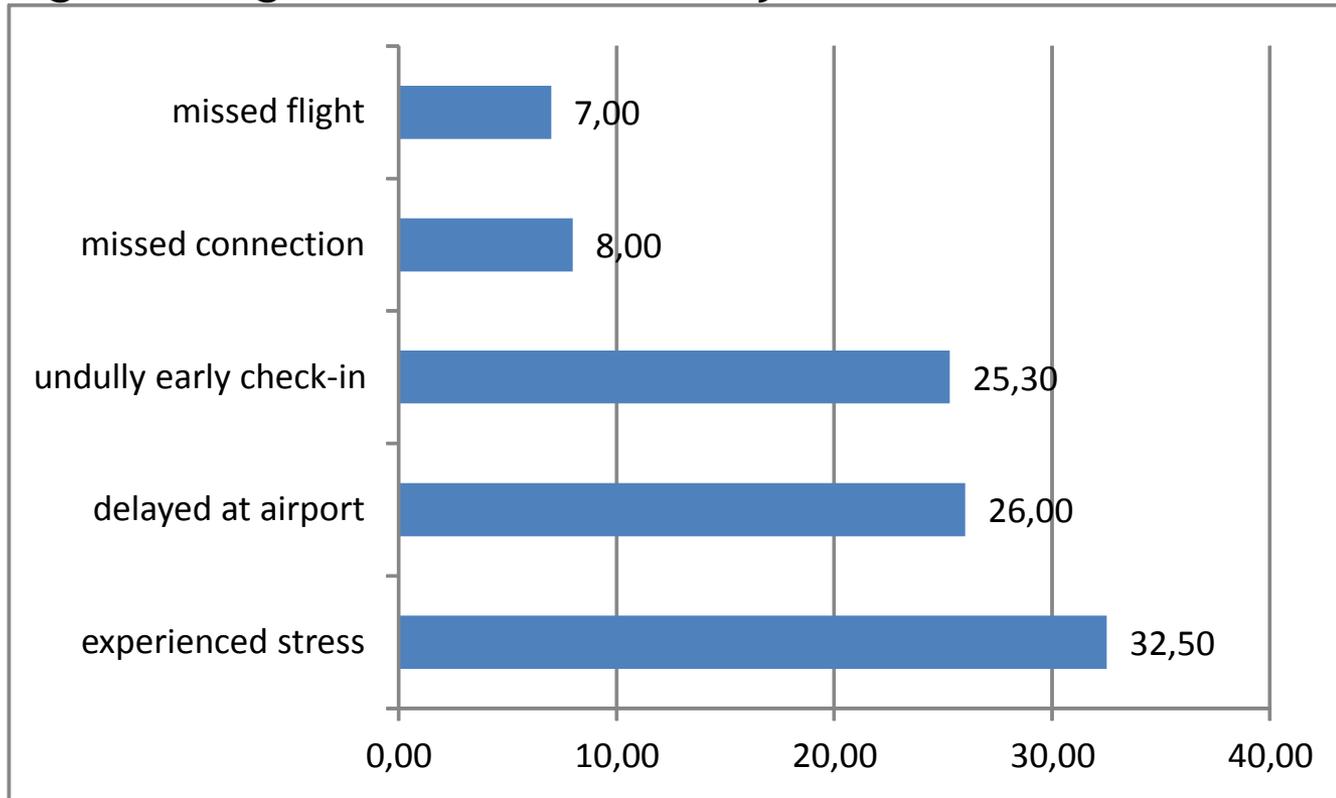
Note: N= 872

Source: Anadolu University

Figure 6 offers more detail look at the gender differentiation of negative salience of security measures:

- in the high negative salience pattern, women express stronger negative salience than man – both in regards to hand search and to full body screening;
- on the contrary male passengers express stronger negative salience in the medium and low negative salience patterns – in respect to X-ray screening, security personnel, metal detector and CCTV cameras;
- these results hint at the need of airport authorities to consider passengers basic socio-demographic characteristics in order to successfully implement and perform security measures.

**Figure 7. Negative effects of security measures**



Note: N= 882

Source: Anadolu University

Figure 7 offers more detailed insights into the negative salience of security measures. In general 40 % of passengers indicated having experienced negative effects of security measures:

- most passengers indicated experiencing stress (more than 32 %),
- delay at airport and unduly early check in (26 and more than 25 % respectively) and
- small proportion of passengers experienced missing their connection or flight (8 and 7 % respectively).

The socio-demographics copy those of the general and negative salience described above.

**Figure 8. Model based on the effects of security measures in airport case study**

Type of security measure		Cost		Profit		Effect on customer Acceptance/ Saliency
		short-term	long-term	short-term	long-term	
Duration		short-term	long-term	short-term	long-term	n/a
Human resources	Hand search	high	medium	low	low	Negative (low saliency)
	Security personnel	high	medium	low	low	neutral/rather positive (medium saliency)
Technical resources	cctv	high	low	medium	medium	positive (medium saliency)
	Metal detector	high	low	medium	medium	positive (medium saliency)
	X-ray	high	low	medium	medium	neutral/rather positive (medium saliency)
	3D body scanner	Very high	low	medium	medium	negative (medium saliency)

## Explanation of the Airport security model 1/2

### 1. Costs

#### 1.1. Human Resources Costs

**Values: high - medium**

Important note: the categories are not mutually exclusive, but cumulative:

**High:** need in personnel recruitment, initial training personnel (taking into consideration personnel turnover), additional/specific training (e.g. in connection with new technologies). This has to be included in company's HR development plan, as well as in medium to long-term strategy (increase/decrease of personnel in connection with new technologies);

**Medium:** regular costs i.e. wages;

#### 1.2. Technical Resources Costs

**Values: high - low**

**High:** purchase (one-time cost), installation of new equipment;

**Low:** regular maintenance, ad-hoc repairs;

## Explanation of the Airport security model 2/2

### 2. Profit

**Values: Low – Medium – High**

This is a relative category, based on increase/decrease of ticket sale-related profit **due to effectiveness of the HR/technical measures (e.g. decrease in fare evasion)**;

### 3. Effect on Customer Satisfaction

**Values: low – high; Direction: negative – neutral**

This category is related to the effect the measure will have on:  
customer satisfaction,

level of acceptance (decrease in negative salience, decrease in passenger complaints);

## 5. Conclusion: Media Analysis Summary 1/2

1. The main factors shaping the media reporting on terrorism threats and security measures are past experience with a particular security threat, as well as probability of the country being targeted in the future;
2. These factors account for the main differences in the extent of coverage dedicated to the issue in the domestic media;
3. We also find that the media landscape is undergoing transformation with growing importance of international context;
4. Terrorism and organized crime are increasingly framed as transactional and beyond the scope of nation-states;

## **5. Conclusion: Media Analysis Summary 2/2**

5. The public is becoming more sensitive not only of threats but also the costs of security and the media play key role in shaping political communication and public attitudes, fulfills its informative and educational functions, and increasingly provide platform for public political discourse, including provision of space for the expression of dissent;

6. Media are also channel for advocacy of political viewpoints (need for regulation, adoption of security measures) and to a significantly lesser degree acting as a 'watchdog' or guardian of freedoms.

## **5. Conclusion: Application of the model to the Airport case I.**

Based on Anadolu Passenger Survey data analysis, which showed that both general salience and negative salience of security measures varies – hand search and full body screening show highest negative salience, whilst X-ray screening is significantly more accepted.

It is therefore important for airport authorities to include the salience of security measures, and in particular the negative salience in their consideration of acquisition of security technology (along the cost and benefit analysis) and training of security personnel.

## **5. Conclusion: Application of the model to the Airport case II.**

In particular in respect to 3D body scanner it is important to consider, given the fact that its negative salience is double of that of X-ray screening, whether the benefits of this security measure outweigh its costs (both in terms of financial costs and passenger satisfaction).

In terms of high negative salience of body search, here the airport authorities need to consider increasing sensitivity to passenger diversity in terms of cultural differences in perception of private sphere and of the body, to identify these and communicate to security personnel during training.

Increased sensitivity to passengers' diversity will increase acceptance of security measures and improve the overall satisfaction with airport security procedures.

Our aim in this presentation was to introduce to you not only the unique research underwent within the Seconomics, but especially to point out to you, that in the times of economic crisis, existing data of the transport providers can be used to provide new insights into customer behavior.

We would like to ask you what data do you have available and whether this method would be beneficial to you – for example your feedback on effectiveness of training as well as the duration of adaptation to new security measures in security personnel.

**Thank you for your attention.  
We are happy to answer your questions!**