Security as perceived by a users’ study on the web service where users can report on security issues

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Abstract

Security in public transport involves a high number of users and a wide variety of “stakeholders” and for this reason transport operators/agencies must adopt a comprehensive approach when designing systems and measures to ensure security in transport. Before tackling the operational aspects, this approach requires operators to have a thorough understanding of the “notion” that users have of security in order to take initiatives that are consistent with their needs. In this scenario, innovative communications systems and/or the innovative use of traditional IT systems seek to comply with ambitious objectives that have considerable operational implications: it is necessary to trace a clear profile of the concept of security according to the users, understand what are the real reasons for the fears that passengers have, understand what security measures would be most meaningful to the users, and to what extent they would be meaningful, and finally monitor the curve of social attention paid to security. In order to go beyond the conceptual dualism that exists between security in the technical sense of the term, and security as perceived by experts, one needs to step out of the shoes of the security manager and interpret reality with the eyes of the man-in-the-street that uses public transport. From this standpoint the service set up recently, which is dedicated to security and which enables anyone who is interested to report their opinions on line, is an effective instrument to collect messages from the users, analyse them and “see” security with the eyes of the users. This initiative offers major practical benefits: social involvement in security management, cooperation by the users, more “eyes” on watch throughout the territory. Thanks to the positive results obtained, as confirmed by the values processed by the monitoring bodies, on-line security will produce increasingly positive benefits for the community as far as the perception of security is concerned.

Keywords: public transport, security, perception of security, on-line reporting.
1 Introduction

Public transport is absolutely central to the life of urban centres and to the communities living in such areas. As has been efficaciously pointed out (Dart [1]) “Urban transit systems are the very lifeblood of metropolitan areas. They preserve our cities as vital commercial centers. Their lines carry citizens to and from their places of work, as well as to educational, recreational, and cultural facilities.”.

In spite of this, the perception of personal safety decreases noticeably when people turn into “users of public transport” given the widespread opinion according to which the use of public transport is associated with high levels of risk for personal safety.

The international socio-political situation in recent years has generated a planet-wide climate of turbulence with an array of disparate threats being posed against civil life. Public opinion is well informed by experts and media (Polzin [2], Hargadine [3], ECMT [4]) about extremist criminal phenomena like terrorism which, together with less severe criminal activities, plague civil society in its everyday life, including Local Public Transport (LPT).

The attention paid to transport security by LPT Agencies is witnessed today by the operational deployment of resources – both human and instrumental – in much larger amounts than used to be the case only a few years ago. Indeed, LPT Agencies are aware of the fact that risks, whether real or only perceived, may condition users when it comes to deciding whether to use public transport and hence appreciably reduce ridership, as maintained by Loukaitou-Sideris et al [5], by Tucker [6], by Cozens et al [7] and by Needle and Cobb [8].

The reason is that in the eyes of criminals LPT is an appealing target given the easy access to and vulnerability of the means and facilities of public transport. It is just as clear in the eyes of LPT professionals that the most updated security policies rely heavily on the adoption of more and more advanced technologies for the prevention/repression of terrorism and petty crimes.

Such reliance on technology is witnessed by the development and marketing of such advanced devices as video-monitoring systems, software for the automatic recognition of threatening events, detectors of contaminating substances of the CBRN type, communication equipment and so on. On the other hand, while there is a massive use of advanced and expensive technology, there is a generalized lack of interest in the security of the more traditional technologies: reference here is being made to the Internet which is hardly every used for purposes other than the mere advertising and/or spreading of information about safety and security.

2 Background information

It is worthwhile providing some information about the organizational structure of mobility services in Rome. The LPT system of Rome envisages (data updated as at July 2004) various forms of transport (buses and trams, underground, night buses, sub-urban lines, light railway) that are assigned to various private
Operators who are the lower part of a pyramidal system with the Municipality of Rome at the top and the Agency for Bus, Tram and Railways transport of the Municipality of Rome (ATAC S.p.A.) in the middle. ATAC S.p.A. is responsible for the design, planning and marketing of mobility services.

ATAC S.p.A. has set up an ad hoc structure coordinated by a Security Manager to manage all the aspects that are of common interest for the individual Operators. In 2003 the Security Staff of ATAC S.p.A. set up a section in the web portal of the company (www.atac.roma.it/security_in_public_transport) devoted exclusively to the security issues of LPT. Given the mentioned centralization of the essential functions of the Roman LPT, in this section of the web portal, room is also given to the discussion of issues and aspects concerning the entire LPT sector of Rome and hence the entire urban transport network is represented.

3 Purposes of the security website: the on-line reporting

The idea underlying this project is that of exploiting the Internet’s potential for operational avenues that have not yet been fully explored for the LPT sector. The web site is structured into six sections: “Implemented Initiatives”, “Security Policies in ATAC”, “Training”, “Issue of the Month and Regulations”, “Links” and “Reports and Contacts”. The website offers a form (unit.sicur@atac.roma.it) that can be filled in on line by the citizens or users in which they express their concerns or make spontaneous statements about security.

This latter function constitutes the biggest usefulness of the site, that is to say the interaction with the users: indeed “on-line reporting” calls on private citizens to take an active part in security issues, giving them the possibility of communicating, making suggestions and/or complaints about security. In setting up a rapid, informal and economic system for reporting information on-line about security, the main objective pursued by the Security Staff is to get a perception about what actually accounts for the feelings of insecurity that the users of the LPT have, that is to say the real perception of security of the passengers.

As emphasized also by authoritative institutions (U.S. Department of Transportation’s Federal Transit Administration [9]), perceived safety is as important as actual security performance, and security is measurable in terms of perception.

Besides the well-known benefits of “data collection” (Boyd et al [10]) in order to target problems, analyse information and set targets, on-line reporting also tends to generate in the users a sense of confidence with security and with public transport settings: it is not enough for users to feel only that they are safe, they must also feel safe, and the fact of attributing an active role together with the idea that LPT Operators/Agencies must manage and pay attention to their feedback, are all factors of perceived safety (on this issue refer to ECMT [11]). Indeed, it is believed that on-line reporting contributes to the shaping of security defined as “... the sense of personal protection experienced by customers, derived from the actual measures implemented and from activity designed to
ensure that customers are aware of those measures.” (Benchmarking European Sustainable Transport Network [12]).

This objective derives from the following considerations:

- A Security Manager of the LPT may, in some cases have a biased perception of potential threats and/or real threats against the safety of people and goods involved in LPT; this phenomenon of “perceptual divergence” is not at all due to lack of experience but is due to a number of causes (academic approach to real problems or lack of pragmatism, insufficient presence in the community of the Security Staff, inadequate order in which the various risks are dealt with, compliance with restraints imposed by the Authorities which have priority over users’ needs, attribution of precedence to severe but not very probable threats, etc.); the effect is that, albeit excellent and expensive, some of the initiatives taken may not be perceived at all by the users, or may not meet the “demand for security” thus contributing – paradoxically – to the proliferation of a sense of insecurity;

- As numerous as the security staff may be and as vast as the Company’s information network may be, which by the way, is normally used for other purposes (inspectors, drivers, ticket sellers, private security guards, etc.), the extent of the transport network is so large as to make it impossible to man or keep watch of every possible site; this is why it is necessary to make the most of the sole resource that is present all over the territory, the users (a similar principle underlies such initiatives, for instance, as “Transit Watch” of the U.S. Department of Transportation’s Federal Transit Administration [13] or the “Eyes and Ears” [14] Programs implemented in many American towns); in spite of this, according to Kernodle [15], the involvement of passengers in security issues must be evaluated carefully because users are not very sensitive about security, as compared with professionals who have greater awareness about this theme;

- Only the setting up of immediate economic and informal communication channels – like the Internet – makes it possible to draw on the information potential that the users have, and they can provide such information if they are appropriately addressed and enabled to contribute to collective security; vice versa, where the user-reporter were to be asked to use the mail service or go personally to a desk, he/she would undoubtedly decline the idea of cooperating; indeed as pointed out by Stafford and Pettersson [16] who have thoroughly studied this issue, the reasons why users do not readily report security anomalies are manifold and, consequently, easier reporting systems need to be developed;

- The prompt communication made possible by the Internet is a benefit also for the Security Staff, because each report is immediately filtered and appropriately dealt with;

- An analysis of the trend that emerges from the reports makes it possible to measure the ups and downs of the level of attention paid by society to security.

It was stated above that this is the main objective, because with on-line reporting it is possible to pursue also other objectives of lesser importance, like
raising public awareness about security issues, involving the users directly and stimulating the civic sense of passengers.

On-line reporting via the website on security matters has the following characteristics:

- From a subjective point of view it gives anyone (employees, users, public and private subjects, associations, individual citizens, etc.) the opportunity of sending in messages/information;
- From the objective standpoint, the user is not subject to any limitation other than sending in only messages related to security; in this regard, it is pointed out that, in spite of the clear thematic connotation of the website “Security in LPT” and the clearly stated invitation not to send messages that are not relevant to security, in practice the user can send messages (free text) choosing the issue freely without restrictions and without the use of a set menu of possibilities; the object of the message may be any issue related to the bus, tram, and underground network and related infrastructure; as will be seen below, this freedom means that are received messages even not relevant to security;
- From the functional standpoint, the willingness not to restrain the user in any way emerges from another fact, namely that in order to send a message, the user is not asked to register; this means that the Security Staff has the delicate task of filtering the messages received; furthermore the on-line security reporting service is separate from the normal customer care service.

4 Criteria for classifying the reports received

4.1 The methodology

Unless otherwise indicated, the results presented here refer to a sample of 148 reports received by the Security Staff in the time-interval between July 2003 and June 2004 (about 12 months). The number of messages received, which may not seem very high, is interesting if one bears in mind how specific the issue of security is and of it being a “niche” in terms of interest with respect to other more popular themes (for instance timetable and frequency of the lines, complaints for fines, other complaints, etc.).

As a methodological premise it is desirable to clarify that the reports received were classified on the basis of the following parameters:

- Type of communication channel used to send in the report (two options: on-line, fax);
- Thematic macro-area of reference (six options: buses, underground, railway, infrastructure, entire network, other);
- Relevance of the reports to the issue of security;
- Main aim of the notice (four options: complaint, suggestion, request for or contribution of information, claim for damages).

Given the fact that the general purpose of this study is to analyse the social attitude of people towards security in LPT, unless otherwise indicated, the
processing of the results has taken into account all the reports received, irrespective of whether they are relevant or not to security.

4.2 Preferred communication channel

In the advertising campaign of the reporting service users were told that they had two options for sending in their messages on security (on-line, and by fax - dedicated to the users with little confidence with telematics services), but the general data relative to the messages received over a one-year period confirm the fact that in general the users prefer the on-line data transmission medium.

More clearly, the traditional “fax” instrument has little importance (used only in 2% of the cases), whereas filling in the form on-line were used in 98% of the cases considered.

Figure 1: Comparison between reports and web hits.

4.3 Trend of security-related reports

As regards the tendency of security-related messages in numerical terms, the analysis carried out by the Security Staff inferred the following data, which are useful for monitoring the attention paid by the public to LPT security and the reactions of the users to particularly severe episodes:

- The trend of reports (exponentially considered) increases;
- In the early months of the security reporting service (from July to October) there was a steady increase in the number of reports sent in as a result of the advertisements in the press and on radio and television, and of the information passed by word of mouth by the users;
• In chronological order the interest in security shows an initial rise followed by a physiological drop during the summer holidays, and then the interest picks up again with a boom with the start of the school year and of people going back to work after the summer holidays (from September to November), and which there is a levelling off of the curve until the drop which coincides with the next summer holidays; the autumn-winter period is therefore the time when the users are most sensitive to security issues;

• The general concern for exceptional criminal events, where international terrorism stands out as the main reason for social concern (Eurobarometre [17]), and the interest of the users in exceptional events (terrorist attacks against the Underground in Moscow on 6 February 2004 and in Madrid on 11 March 2004) are reflected directly in the number of hits on the “LPT Security” section of the website, whose trend goes up with an evident peak in number of hits in March 2004 (Figure 1).

4.4 Macro-areas of reference of the reports

Based on its content, each report that was received was classified into one of the following thematic macro-areas:

• Buses: security referred to bus transport;
• Underground: security referred to the Underground railway;
• Railways: security referred to the urban and suburban light railway lines;
• Entire network: security referred to the transport network as a whole without any distinctions as to mode of transport;
• Infrastructure: security referred to sites (for instance bus shelters, stations, etc.) or specific themes (e.g. town planning);
• Other: reports concerning different subjects other than those listed above.

Figure 2: Macro-areas to which messages refer.
The outcome of the analysis (illustrated in Figure 2, next page) shows that the attention of the users as regards security focuses mostly on buses (70% of the reports) and the Underground (16%), while for the other sectors there was only little and occasional interest. Such information is useful because it enables the Security Staff to identify the specific vulnerabilities of the various modes of transport inside the total risk system, and to measure the perception of security of the users as referred to the various types of transport.

4.5 Relevance of the reports to security issues

With reference to the sample being examined, the number of messages related to security issues accounted for 50% of the total with half of the messages being related to other issues.

The classification criterion adopted by the Security Manager considers “security” as prevention measures and/or adoption of initiatives for the personal safety of passengers and employees and of goods, for the integrity of the vehicles and infrastructure, for ensuring regular transport services even in the presence of real or potential threats, as well as seeking to generate a “feeling of security” among the users.

The data tell us that the idea of security for the users is quite different to the meaning given to the term by the experts of the sector and, consequently each security intervention needs to be calibrated in order for it to be perceived also by the users.

4.6 Trend of the relevance of the reports

The analysis carried out shows a decreasing trend in the reports that are unrelated to security and this means that over the months, the users have understood the concept of security by sending in reports that were more relevant to the declared aim.

4.7 Classification of the reports by main purpose

The reports were classified according to the main purpose, namely:

- Complaints;
- Information (both request for information and contributing information to the Security Staff);
- Suggestions;
- Claims for damages for road accidents, injuries or other accidents.

Mention is made here of main purpose because the purposes of the reports are often hybrids (in that they may contribute information but also lodge a complaint, or provide information about some anomalous situation plus suggest a solution) and so it was necessary to identify a prevailing purpose.

From a static viewpoint the analysis shows that the purpose of the users is to “complain” in 62% of the cases, request/exchange “information” in 26% of the cases, whereas “suggestions” and “claims for damages” account for 7% and 5% of the cases respectively.
The dynamic analysis instead shows that the attitude of the users evolves over time: indeed, whereas sending in reports for “complaining”, “making suggestions” and “claiming damages” decreased in time, the messages with the aim of providing “information” increased.

On the basis of such data the following observations can be made:

- The fact that the tendency to make complaints or claim damages shows a decreasing curve is indicative of the fact that the initially “antagonistic” approach of the users with the LPT service is slowly changing, the sharp edges are being rounded off and users are starting to engage in a collaborative effort with the LPT Agencies/Operators;
- The sole trend that is increasing is the “information” item; the large number of messages spontaneously sent in by the users to report on situations of risk represents a sizeable contribution to a careful management of mobility;
- The progressive decrease in “complaints” or “claims for damages” bears witness to the soundness of the solutions adopted against the anomalies that were reported, and to the fair manner of interacting with the users; also Hargadine [18] insists on the link between the users’ perception of security and the visibility of security initiatives taken by LPT Agencies/Operators.

![Comparison of reports and anomalous events](image)

**Figure 3:** Comparison of reports and anomalous events.

### 4.8 Comparison between reports and anomalous events

One last analysis of the behaviour of the users concerns the comparison between the trend of the reports on security and the trend of anomalous events recorded by the Security Staff.
The term ‘anomalous event’ refers to four types of events (“aggression”, “vandalism”, “thefts”, “suspicious abandoned packages”) that pose risks to the safety of people, to the property of passengers and staff, and to the integrity of the vehicles and infrastructure of the entire LPT network of Rome.

Going back to what was said previously about the concept of “divergent interpretation of security” between users and staff, also here mention must be made of a similar concept, namely “divergence in perception”, where subjective perception of risk by passengers is considerably attenuated with respect to the real trend of criminal phenomena, as demonstrated by the statistical analysis of the events that were recorded. This is confirmed by the very small number of messages dealing with crime (thefts, aggressions, pocket-lifting, graffiti, etc.), and by the comparison illustrated in Figure 3 between the actual trend of anomalous events that occurred and mention of such events in the reports, with the former increasing while the latter decreased.

This proves that for users, their personal perception of security, albeit not precise at times (ECMT [19]), is more important than real security: people assess their personal security on the basis of external circumstances, personal experiences or experiences of other people they know, and not on the statistical analyses of criminal cases (London Transport Users Committee [20]), as maintained also by Tucker [21], by Needle and Cobb [22], by Cozens et al [23] and by the Michigan Department of Transportation [24], which defines this phenomenon as “…perceptual mismatch between the public’s perception... and the actual level of transit safety.”.

5 Conclusions: the security from the standpoint of the users

The processing of the information gathered over 12 months during which the security reporting service was in operation enabled the Security Manager to delineate a precise profile of the notion of security for the users. It is clear how such knowledge about the approach that passengers have to security issues provides a useful wealth of information to the Company management which is not only a cultural asset but it is useful for at least two reasons:

- On the one hand it helps to make sure that security initiatives are recognized by the users thus contributing to increasing their sense of perceived security;
- On the other hand it integrates the company notion of security with the wide array of requests coming from the users of LPT, in order to implement the customer-driven and user-focused approach that was recently embodied in the Strategic Plan of the U.S. Department of Transportation [25].

In an era where safety and security issues are in the forefront, it is essential that LPT Agencies/Operators insist on the importance of participatory initiatives and models for security, that they provide incentives to the active participation of the users in reporting risks and suspicious events, and that they strengthen the “…feeling of partnership among riders and employees…” (Thompson [26]).

In general the users prove to have a concept of security which is complementary with that of the Operators, as shown by the issues reported in
most cases concerning aspects that are relevant and of priority importance for security policies.

The current international situation induces companies to invest huge amounts of resources to face the threat of terrorism and crime in general, as for instance the special measures taken to manage major events (frequently held in Rome), the study and development of technological security systems that are more and more sophisticated (“intelligent” video-monitoring in the Underground, CCTV on board vehicles, CCTV and safety alarms for company premises, protection of the infrastructure, etc.).

All this to say that the users and the Security Staff can join forces and work together so as to adopt the initiatives and actions (Dorn [27]) that are necessary to achieve the common goal of raising the users’ perception of security.

During this last year of experience with the on-line reporting service, in-depth surveys carried out by Observers (Agency for the Monitoring and Quality of the Local Public Services of the Municipality of Rome [28]) on the various indices concerning urban LPT have confirmed the improvement in positive values for the security-related indices with respect to the past. This induces both the Company Management and the community to continue with the objectives that have been set, provided that the Government authorities – that are however committed to security - acknowledge the need to continue their support of security-oriented interventions in time.

In the following a list is provided of the issues pointed out by the users that are more closely related to security (even though some are only roughly related to security): careless driving, dangerous positioning of bus shelters, road accidents and claims for damages, poor hygiene conditions, vandalism, writers, aggressions, thefts and petty crimes, environmental pollution, metal detectors in the Underground, peddlers who obstruct the safety exits, armed security guards, maintenance of vehicles, security communication systems, dangerous conditions of the infrastructure, crowding of the platforms in the Underground, information to the users about petty crimes.

The study therefore delineates the concept that the average user has of security, who in general:

- Shows an interest in terrorist and/or catastrophic risks and is more inclined to getting information from the website; it is likely that such user is sensitive to exceptional events and this induces him/her to seek information every day;
- Is interested in aspects that are directly linked to security (presence of guards in the Underground, security communication systems, monitoring of crowds on the platforms, controlling passengers, etc.);
- Pays close attention to less severe parameters but are related to daily life (careless driving, involvement in road accidents, poor hygiene conditions, etc.);
- Is very demanding in terms of safety, as evidenced by the constant attention paid to the maintenance conditions of vehicles and infrastructure;
• Pays more attention to comfort in travelling (punctuality of the vehicles, cleanliness, special fare rates) than to the lack of safety for people and things;
• Is very demanding from the environmental standpoint with regard to the impact that LPT has on the surrounding territory (liquid/gas emissions and noise) and on the residential areas.

In particular the last four points in the list confirm the influence of external circumstances – that cannot directly be related to security – on people’s perception of safety, as maintained in the ECMT [29].

The information that has been gathered suggests that the users perceive security as an indispensable characteristic (a “must-have”) that transportation services must have in order to attract users. Even though the deliberate choice of not recording the personal data of the users-reporters does not allow for the evaluation of the perception of security on the basis of some parameters (age, gender, nationality, purposes), it is quite plausible that in the current situation, the awareness of security issues does not concern only those individuals traditionally deemed to be more vulnerable (elderly, women, etc.), but potentially anyone (London Transport Users Committee [30]), as analysed by Stafford and Pettersson [31] with reference to a number of parameters (gender, age, ethnicity, disability, etc.).

The fact that users have responded well to the on-line reporting service has confirmed some arguments that are commonly discussed in the literature, namely that users consider security as an inseparable component of transportation, that - as a consequence- responsibility for personal safety of the passengers is deemed to be a burden to be shouldered by the LPT Operators/Agencies (Loukakos and Blackwelder [32]), and that taking care of safety and security is perceived fully as a “quality of service factor” (Kittelson and Associates Inc. [33]).

In conclusion, as maintained by Milligan and Company [34], in the area of public transportation security it is desirable to attribute an active role to users, facilitate the free flow of information and monitor “...security from passenger and vehicle operator perspectives” in order to improve safety in transportation.

References


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