

The Service Charter of Palermo Airport: Identification of Populations and Selection of Sample Units¹

La Carta dei Servizi dell'Aeroporto di Palermo: Problemi di Identificazione degli Universi e di Selezione delle Unità Campionarie

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Riassunto: In questo articolo sono discussi alcuni problemi metodologici e pratici legati all'implementazione di strategie campionarie casuali nel campo della valutazione dei servizi aeroportuali. Essendo tali servizi indirizzati a diverse categorie di utenti, limiteremo l'attenzione ai servizi ai passeggeri, nel contesto dell'emanazione della Carta dei Servizi.

Keywords: Service Charter, Quality Evaluation, Sampling.

1. The Service Charter (SC) of Italian Airports

The Prime Ministerial Decree 27/01/94, "Principles on the supply of public services" (Ciampi-Cassese Directive) obliged supplying boards to adopt quality standards and verify the observance of them. After further provisions of the law, the Prime Ministerial Decree 30/12/98 issued the norm to organize the SC in the field of public transport. In 2001, the Italian National Board for the Civil Aviation (ENAC), responsible for "the definition and the control on the quality parameters of airport and transport by air services" issued the "*Guidelines*" for the adoption of Standard Service Charters, addressed to airport management companies. The SC is a "set of formal undertakings" with respect to eleven quality "factors" (ranging, just to exemplify, from flight safety to the service punctuality, from relational and behavioural dimensions to the care to the environment) (ENAC, 2001). ENAC also prescribes the adoption of sample strategies for the fixing of standards and for the control of the observance of values already undertaken.

Starting from 2001 GESAP, the management company of Palermo Airport, yearly publishes its SC. It only concerns services supplied to passengers that will be discussed in the next sections.

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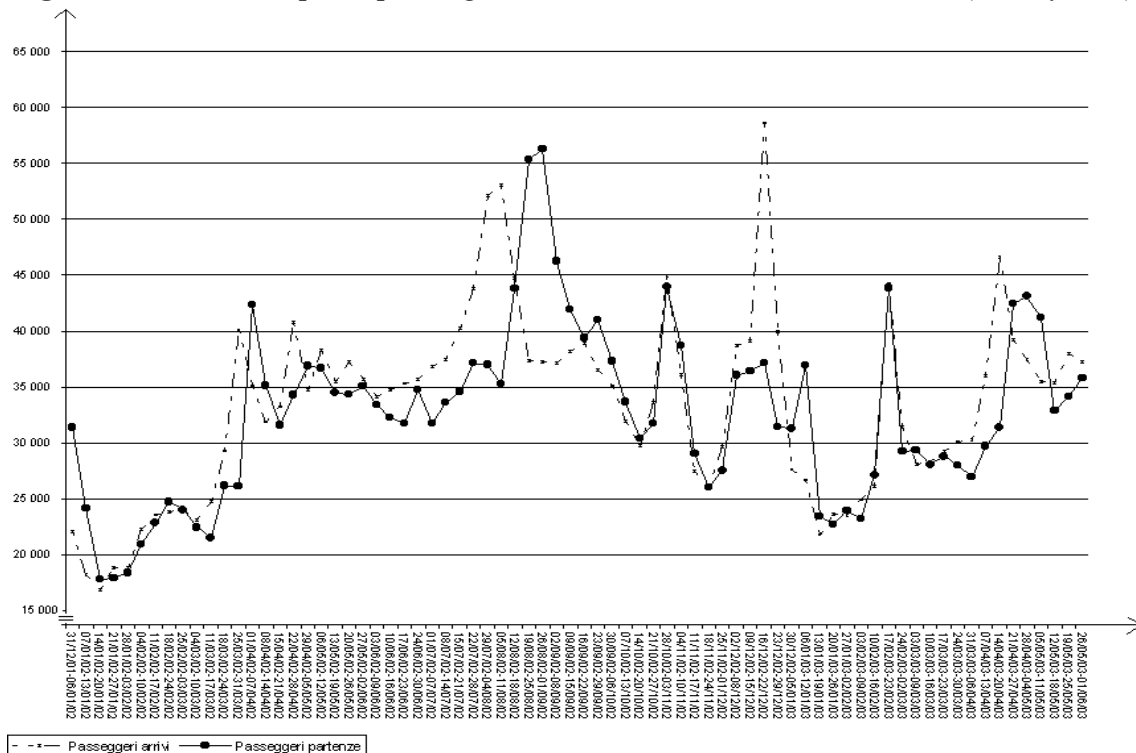
2. The data gathering plan

ENAC selected fifty-four elementary indicators to measure the eleven quality “factors”. It seems that no proper statistical techniques supported nor the identification of such factors nor the selection of elementary indicators (a next development of this work will in fact focus on such topics).

Information reported within the SC are of different kinds (ENAC, 2001). We shall refer to: a) passengers’ perceptions on the quality of enjoyed services (“surveys on consumers”), recorded by means of interview forms; b) waiting times (“quantitative data”), gathered by means of observation grids. ENAC prescribes the selection of random samples for both.

Data are actually gathered during twelve monthly cycles of one week, for all variables throughout all the hours of the day (though in different days within selected weeks). Cycles were selected on the base of the passengers traffic registered in 2002 and in the first six months of 2003 (whose series is reported in Figure 1), by balancing periods of “high” (above the mean), “medium” (around the mean) and “low” (below the mean) traffic, obviously associated with the quality of supplied services and with consequent perceptions.

Figure 1: Palermo Airport - passengers traffic from 01-01-02 to 01-06-03 (weekly data)



Source: GESAP (2003)

3. The gathering of sample “objective” data

For the definition of waiting time standards, ENAC prescribes the calculus of the upper unilateral tolerance bound for the 90% percentage. In order to verify the observance of

undertakings, the techniques of “inspection by attributes” are prescribed (UNI, 2001; Tamburrano, 1981; Colombo, 1974).

Data are gathered both at the arrivals (for example: waiting time for the landing of the first passenger) and at the departures (for example: check-in and radiogenic control queues).

With respect to such variables, a sample stratified by the traffic levels and the kinds of flights can be drawn. The random selection of units cannot yet be made before data gathering because of the difficulty of coordinating the work of a limited number of interviewers (four), characterized by frequent transfers to different positions. Moreover, frequent and not foreseeable changes in the official programme of flights are carried out by airport authorities. Units can yet be randomly selected with a proportional criterion from the overall database after the end of data gathering, because of the availability of a great amount of data, obtained for all months of the year (and for all hours of the day) over all variables.

4. The gathering of sample subjective perceptions

ENAC prescribes the construction of confidence intervals on estimates obtained by special polls, for fixing satisfaction standards and verifying the observation of them. In the case of Palermo airport, passengers are interviewed at the boarding lounges. Passengers about to leave are in fact generally well disposed towards the interview.

If information on passengers’ peculiarities were available, *the random selection of sample units* could be obtained in a way similar to that proposed for “objective” data. In our case it yet appears the problem of the *correct identification of the population*. Is it constituted by users or by uses?

In the first case it will be observed that throughout the year, multiple transits of passengers occur within the air terminal. When the overall passengers traffic is estimated, such transits are added up. This fact causes the well known phenomenon of “multiple registration (repetitions) of units within the list” (Fabbris, 1989). If one knows the number of such repetitions, he/she can control an error associated with the otherwise implemented sampling design.

In fact, let r_i be the number of entries of the i -th unit within the list ($i=1,2,\dots,M$), n the number of drawings and N the overall number of entries within the list; the probability that the i -th unit is included in the sample is:

$$\pi_i = nr_i/N \quad (1)$$

and a weight should be associated with each unit:

$$w_i = 1/r_i. \quad (2)$$

In the case that several units are included in the list with different numbers of repetitions, the *Deff* on estimates of the mean never assumes values less than 1:

$$Deff = 1 + \sum_{j>}^k \sum_{j'}^k W_j W_{j'} \frac{(r_j - r_{j'})^2}{r_j r_{j'}}, \quad (3)$$

being $W_j = n_j w_j / m$, n_j the number of units affected by j repetitions ($j=1,2,\dots,k$), and $m = \sum_j w_j$.

We also know that the greater the interval of variation of weights, the greater the *deff* (Fabbris, 1989).

The regular and the occasional passenger do not differ only for the fact that the former has a greater probability of being selected: it is in fact supposable that his/her greater experience also influences opinions and subsequent judgements.

The occurrence of multiple transits led us to put the “theoretic” question of the reference population, involving both the nature of answers and the probability of obtaining them within the sample. We have till now included some warnings to interviewers in order to homogenise answers (referring them to a single journey) and to initially estimate the numbers of users and of their multiple transits.

Arriving passengers frequently say they have no time to give an interview. On the other hand, it is supposable that people about to leave will later be arriving or already arrived at the same airport (especially for the case of Palermo, where it is difficult to arrive or leave again by alternative means). As a direct consequence, one could decide to administer interviews only to passengers about to leave. In this case lack of information and special perceptual biases would yet be generated. In fact, at least for the case of charter flights, perceptions are certainly influenced by expectations associated with the beginning of a holiday (foreign tourists) or by experiences made throughout concluded holidays (Sicilian people returning home).

Sampling strategies can be implemented without lack of reference to the correct population by detecting different “journey styles” associated with different degrees of plane utilization (and consequently, with different degrees of air terminal attendance), such that actual repetitions (and consequently the population amount) can be estimated. This is a question of classification that can be analyzed by means of traditional statistical techniques such as discriminant analysis (Delvecchio, 1992). Such a solution is able to produce further remarkable benefits, such as the proper processing of missing answers. The suggested approach obviously determines a structural alteration of the actually used interview form, in order to differentiate passengers with respect to the dimensions influencing their perceptions of services.

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