Customer Satisfaction in local passenger transport considering safety sensation

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The realisation of passenger requirements in local and rail-bound passenger transport is an increasing challenge, particularly with regard to the rising competition between different transport service providers on the one hand and the rivalry towards the motorised individual transport [1] on the other hand. Classic quality criteria in local passenger transport [2] like availability, accessibility and environmental impacts are no longer exclusive decision criteria for choosing local passenger transport. Attributable to increasing crowds of people due to mega events as well as criminal acts on rail facilities (attacks, harassments and vandalism), the safety idea gets increasing significance. Causes for unfulfilled customer requirements in local passenger transport vary. The individually perceived quality standard and the subjective safety sensation of passengers are fundamental parameters for the determination of customer satisfaction. This certainly not topical insight still introduces possibilities to develop modified methods to capture the customer voice in local passenger transport.

1 Safety relevant problems in local passenger transport

The individual safety sensation of passengers and pedestrians in rail facilities can take place in different ways. An alarming feeling of being latently threatened will mostly be suppressed. However this suppression can lead to uncontrollable reactions. Some people could tend to sudden movements like running away. If those uncontrollable reactions happen in narrow places like escalators, this behaviour could be collectively enhanced. The situation escalates and will probably turn to panic. The potential passenger's awareness of such circumstances and the frequent feeling of claustrophobia and helplessness, cause customers to refrain from using local passenger transport. Ultimately this leads to total dissatisfaction. At first a loss of image and eventually sales shortfalls are the consequences for the transport service provider [1].

Compulsory the question arises, how to deal with the subliminal sensitivities of rail passengers. The detection of particular customer requirements depends on different factors. Customer requirements can either be expressed, or unexpressed and hence be hidden for the recipient. These unexpressed demands correspond to latently existing requirements. I.e. these latently existing requirements are hidden for the recipient, too. Primary distinctive feature of latent and unexpressed demands is the customer's awareness of his needs. The customer subliminally feels a shortcoming, the palpable existence of this need, though, is even hidden to the observer. Other customer demands are depending on the situation. These demands either appear from case to case or suddenly. Some of these demands are basic human needs like thirst, hunger and the sensation of cold. Safety relevant for passengers is the sudden appearance of uneasiness, e.g. the threatening appearance of certain persons.

Group specific demands can be requirements concerning a circle of persons. In case of common rail journeys the harmless instance could be the wish for a group discount. Among the safety criteria the common need of a riskless transport will arise. If this collective requirement won't be fulfilled, the reputation of local passenger transport will be damaged. Every concerned person draws his conclusion from beforehand experienced situations. Another aspect relates to the event specific customer requirements. These arise, similar to the situation-depending demands, from case to case but not suddenly. Taking safety into consideration, event specifications are big events like important football matches, pop concerts or the visit of celebrities at the respective place. Essential in this case are the enormous crowds of people that have to be managed by means of local passenger transport and therefore might lead to uncontrollable reactions. Finally time specific demands have to be mentioned, e.g. concerning regularly recurring situations. In the local passenger transport increasing crowds of people arise in the morning and evening due to commuter traffic. Just as regularly violence-prone persons use the stations as a forum, resulting in passengers who feel threatened.

Generally, the aim is to prevent uncontrollable situations resulting from uneasiness, which are caused by threatening moments that sometimes escalate. The objective in this context remains to be the fulfilment of customer requirements in the domain of passenger safety [3].

Figure 1: Attack on a pensioner in the Munich Underground in December 2007[1]

2 Different types of customers

Basically passengers always develop individual priorities in terms of their quality sensation of service around passenger transport. In the Norm DIN EN ISO 9000:2000 quality is being defined as the "Degree to which a set of inherent characteristics fulfils requirements". This general approach can now be assigned to the requirements of different customer categories. Hence the passenger's age-related requirements can be uttered in terms of adequate comfort demands and various improvements concerning the access to local passenger transport, due to the fact that elder passenger's orientation ability can occasionally be limited. The safety demands of elderly people are particularly distinctive; especially in moments of less traffic activity [4]. A familiar environment and a social safety sensation are also important for seniors. The living conditions of elderly people are changing more volatile than the ones of younger people. About 40% of German

[1] http://www.br-online.de/bayern1/mittags-in-muenchen/regionalnews-muenchen-schlaeger-ID1208433213940.xml, 25.04.2008

seniors orientate their leisure time on mobility criterions. “In accordance with the requirements of elderly people” doesn’t only mean barrier-free. It rather means improved handling, service and subjective safety [5]. Activities of mobility training are also useful to reduce insecurities and fear when using local passenger transport [6].

Another category of passengers concerns different ethnic population groups, whose mentality partially differs significantly. An “Increase of cultural multiplicity due to immigration” is to be noticed [7]. The disposition for conflict and violence in particular of teenagers is problematic in context of ethnic stigmatisation [3].

Leisure interests are additional factors, which correlate a priori with demographic influences. Leisure mobility of younger people is initially age-related and therefore depending on the availability of a car as motorised individual transportation. Depending on destination, distance and the option to pick up further young people, the use of local passenger transport tends to zero in favour of the motorised individual transport [8]. Even seniors rarely use local passenger transports despite their higher need of mobility [9].

The behaviour of customers concerning the choice of an appropriate mean of transportation basically depends on concurrent motives of passengers. Related to the above-mentioned leisure interests and business interests, as well as individual and group needs of internal and external customers, these named motives can be assigned to “common sense motives”, i.e. primarily used for the overcoming of distance [10]. Here, physiological and ‘other’ motives, as well as safety motives are included. In accordance with the classification of Maslow [11], one can call safety motives “motives of deficit”. “Other Motives” primarily match passenger interests and are closely associated with common sense motives like “time and cost saving, reliability and independence“.

3 Requirements of passengers

The basic requirement of passengers is at first the mandatory service, i.e. the assurance of adequate transport services [12]. Adequate transport services are available, if the local passenger transport is a complete alternative to the motorised individual transport and if it allows equivalent living conditions. Major goal thereby is the mobility of the population. The degree of fulfilling these requirements is reflected in the evaluation of the “local passenger transport barometer”. In 2007 the mean of German Global Service Satisfaction laid in an ordinary range. The general tendency in terms of the fulfilment of requirements yet rises continually [13]. The offering quality thereby is decisive. Meant is the traffic significance, relevant for the “quality of traffic performance“ and the “degree of realisation for heterogeneous quality dimensions“. These are called fraction values/-qualities [14]. The Norm DIN EN 13816 [2] for example describes the perception of the performed service quality by customers, which then is being classified as quality demands (table 1).

Table 1: quality criteria in the local passenger transport

Quality category	**Description**
availability	Amount/extent of offered services regarding area, time, frequency and conveyance
accessibility	Access to public transport including interfaces to public conveyances
information	Methodically granting information about the public transport system in order to simplify the planning and realisation of journeys
Time	Time aspects regarding planning and realisation of journeys
customer support	Service elements for achieving the greatest analogy between standard service and customer requirements
comfort	Service elements to make journeys relaxing and comfortable
Safety	Customer's impression about personal safety arisen from both actually performed safety arrangements and measures that enable customers to be aware of safety arrangements
environmental impacts	Effects on the environment due to provision of local passenger transport services

Looking at figure 2, you see the top ten of passengers' main requirements asked for in a United Kingdom survey [15]:

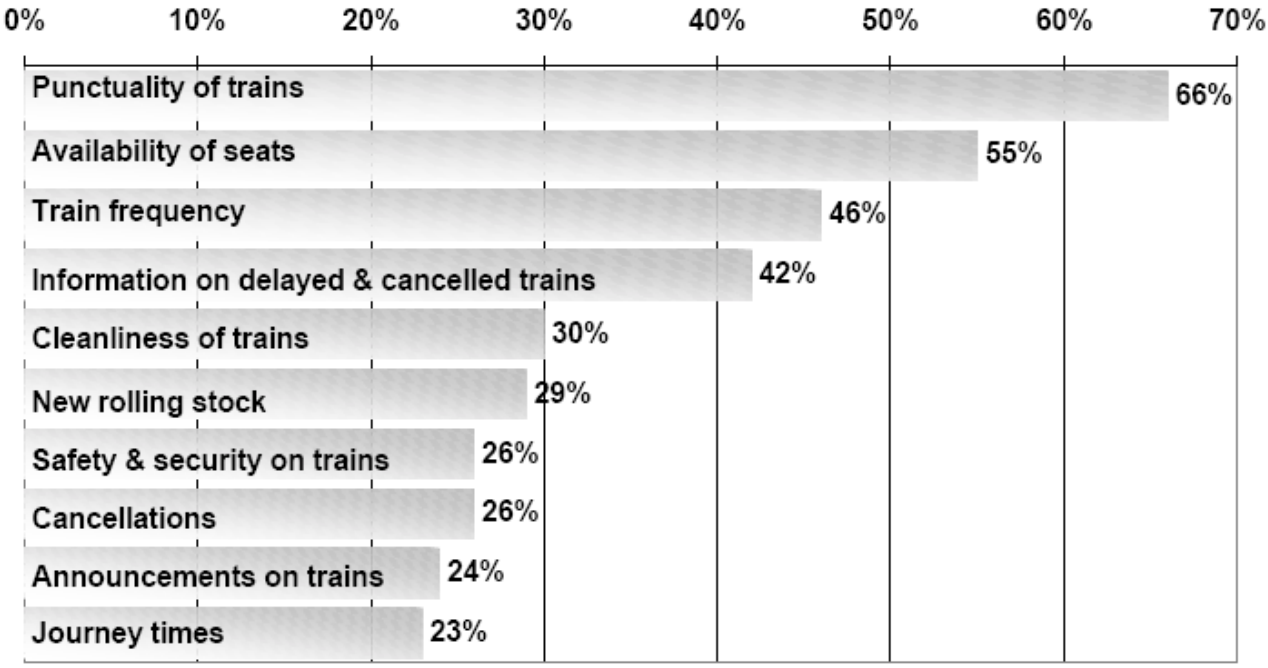

Figure 2: Passengers' main requirements[2]

4 State of the Art

To explicitly measure customer satisfaction in terms of their safety sensation, different models, norms and methods are being considered. Fundamental norm is the DIN ISO 13816 (2002) [2]. Furthermore, exemplarily mentioned are the Iceberg model [16] and the Kano model [17] of customer satisfaction. In addition, the keypoint analysis will be looked upon in context of the service offer by passenger transport providers. For the discretional gathering of the customer voice in the local passenger transport, the toolbox "Cards & Lights" is very suitable [18].

4.1 Norm for definition and determination of performance goals as well as measurement of the service quality

The norm DIN ISO 13816 primarily defines the above mentioned quality criteria in the local passenger transport. Additionally different levels of service quality will be explained:

- Expected service quality: explicitly and implicitly expected by customers
- Intended service quality: aimed at by service providers for customers
- Performed service quality: achieved quality level from a customer's point of view
- Perceived service quality: quality degree individually perceived by the customer

[2] http://www.saferpak.com/csm_articles/An%20article%20for%20Interactive%20Marketing.pdf (27.02.2008)

For the measurement of the service quality the following methods are shown:

- Customer Satisfaction Surveys – CSS: carrying out questionnaires
- Mystery Shopping Surveys – MSS: service watching by trained testing teams
- Direct Performance Measures – DPM: random sample counts

Safety aspects are being defined according to the avoidance of criminal acts and accidents as well as the implementation of emergency management.

4.2 Iceberg model of customer satisfaction

The Iceberg model differentiates between two essential items for describing customer demands. The peak of the iceberg symbolically represents the expressed demands of the customer respectively the passenger. These explicitly transparent demands usually are hardly articulated passenger requirements. Contrary to it there are the unexpressed demands, pictured as the non-visible part under the water surface. Mostly, these un-transparent requirements conceal a lot of latently existent customer expectations and problems. The particular of this issue is to point out and to detect those hidden demands as a basis to fulfil covert customer expectations.

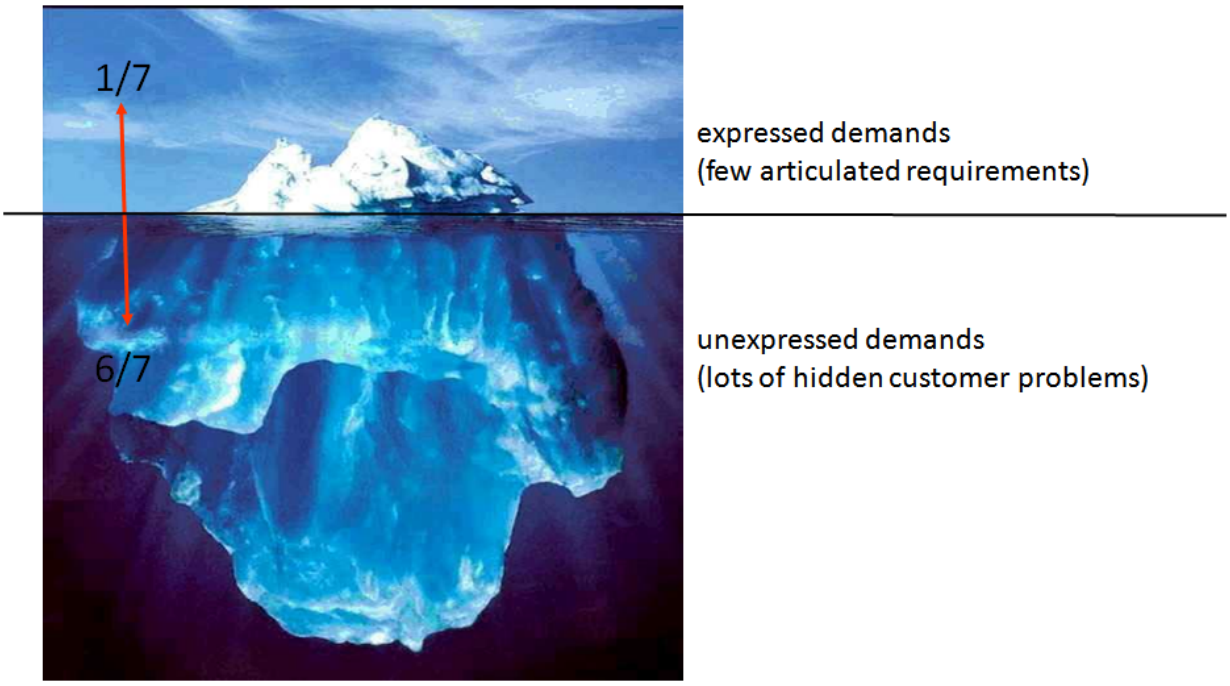

Figure 3: Iceberg model of customer satisfaction[3]

[3] www.ehfg.org/fileadmin/ehfg/Website/Archiv/2003/Power_Points/Forum_A1/A1_Breucker_final.ppt, (13.05.2008)

Leant on: Hinterhuber, H.H. et al., Kundenzufriedenheit durch Kernkompetenzen (1997)

4.3 Kano model of customer satisfaction

Depending on the correlation between fulfilment of demands and the subsequent satisfaction, the Kano-model will differentiate among Basic-, Performance- and Enthusiasm attributes [19]. The perception of different product features by the passenger as a customer will be assigned to these attributes. Even the quality categories after the norm DIN ISO 13816 [2] can be ranged according to the systematic of the Kano model. In analogy to the Kano attributes, the three levels ground-utility, basis-utility and additive-utility [20] will be mentioned. Ground-utility and basis-utility are taken for granted while additive-utility is increasingly essential as a basis for decision-making for the use of local passenger transport.

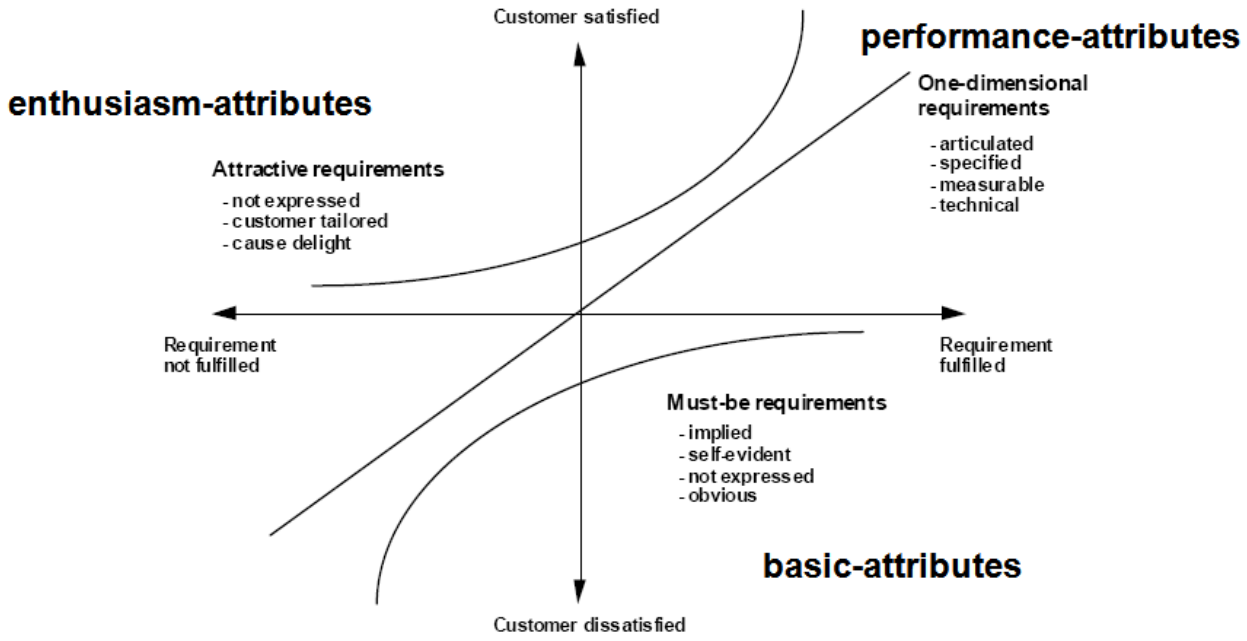

Figure 4: Kano model of customer satisfaction[4] [17]

[4] http://www.competence-site.de/dienstleistung.nsf/3397D512929D8241C1256AD8004B0027/$File/kano-model.pdf (25.02.2008)

The quality categories can be found in the following three levels (table 2).

Table 2: Customer requirements on transportation companies

Levels of Customer-demands [20]	Attributes by Kano [17]	Quality categories [2, 20]
level 1 (ground-utility)	basic-attributes	**availability** **time** (operating time, schedule frequency, speed) **safety**
level 2 (basis-utility)	performance-attributes	**accessibility** (reliable connections)
level 3 (additional-utility)	enthusiasm attributes	**information** (staff competence, service time of the helpline/call centre **customer support** (kindness of staff) **comfort** (cleanliness of trains and facilities, cosiness)

4.4 Customer voice collection and service performance cluster

The determination, particularly of safety relevant sensations of passengers, should be ensured with little effort and preferably discreet, in order to avoid any operating trouble [21].

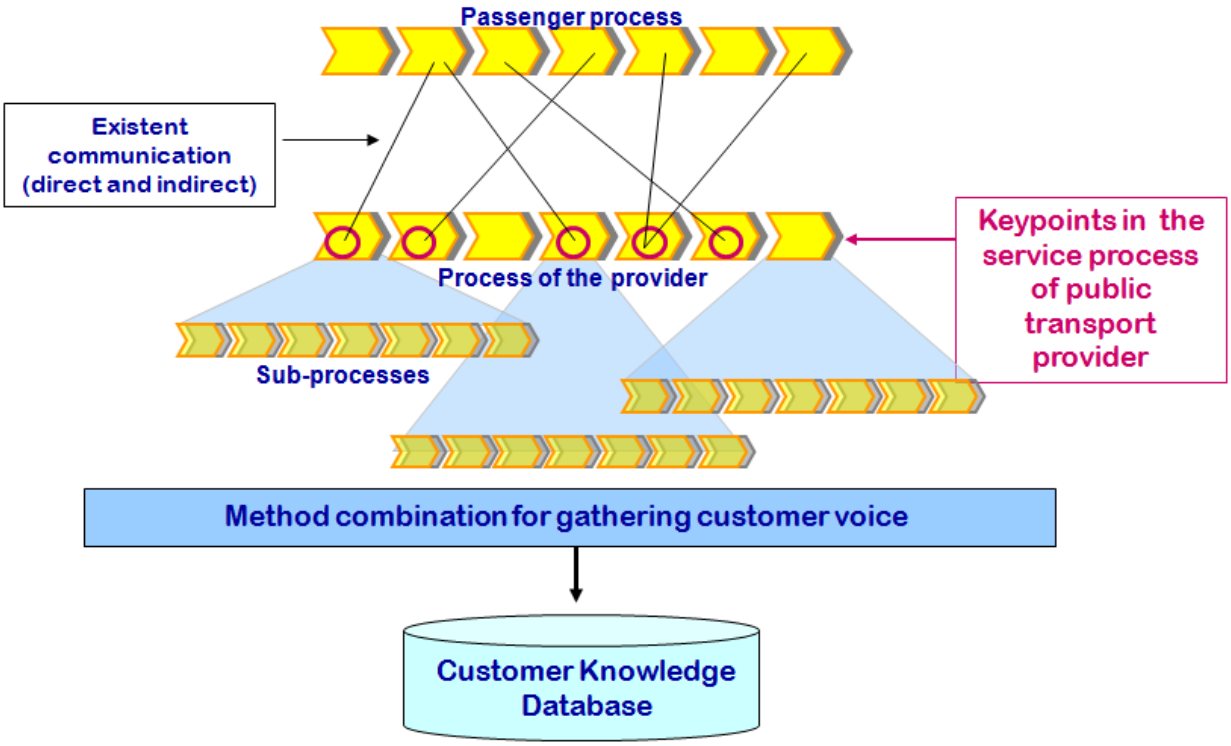

Figure 5: Keypoint communication and data collection[5]

[5] Leant on: Winzer, P.; Fiedrich, S.; Degenhart, T.: Projekt „Ratioparts“ (28.02.2008)

Appropriate starting points and the information content of customer surveys are also important. Figure 5 illustrates at which possible customer keypoints with the service provider, sensations of customers can be measured. These keypoints can work in terms of communication between persons (direct) as well as between persons and schedules or screens (indirect). The combination of different measuring methods and the data gathered this way will be directed personal-, time-service- and subject-matter related into a customer knowledge database. The database generates a meaningful output relationship. The result should be a purposeful customer satisfaction survey on the basis of a service performance cluster as seen in figure 6.

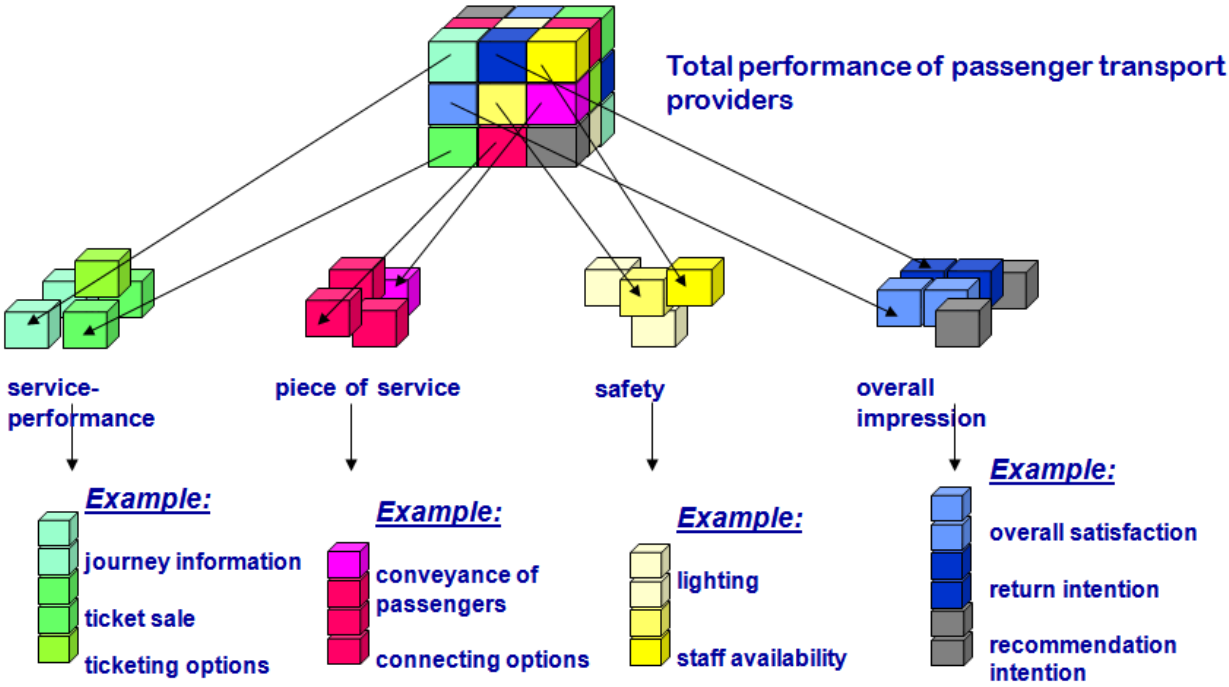

Figure 6: Service performance cluster of local passenger transport providers[6]

4.5 Cards & Lights – a toolbox to implement the customer voice

The inherent methodology of this system due to discreet customer polling about the satisfaction of the service performance describes two different measurement methods. The customer simply has to vote about a pre-formulated statement according to the received service on a little card and insert the card into a ballot-box.

[6] Leant on: Winzer, P.; Fiedrich, S.; Degenhart, T.: Projekt „Ratioparts“ (28.02.2008)

4.5.1 Poll-Card

- Looks like an ordinary postcard that displays different statements from the service-performance-cluster in a range comparable to school marks.
- Customer is asked to make his vote during the payment procedure.
- When leaving the shop, the customer drops the card in an urn/ballot-box.

Disadvantage: Not appropriate for polling in trains and stations! High effort due to the pre-condition of filling-in the poll-card.

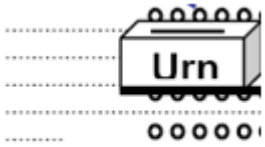

Figure 7: Ballot-box for previous filled-in poll-cards

4.5.2 Poll-Light

- Ballot-boxes shaped as traffic-lights.
- Every signal-colour shows a judge-weight: positive (green), middling (yellow) or negative (red) and each colour has a separate slot.
- Arriving at the check-out, the customer gets a visiting card with one statement from the service-performance-cluster.
- By leaving the shop, customer drops the card in a slot of his choice.

Advantage: Good basis for election when leaving a train! Passenger only needs to drop the card with the pre-formulated statement in one of three optional slots of the ballot-box.

Figure 8: Measuring urn/Ballot boxes with optional slots like traffic-lights

5 Result and Outlook

This article describes the customer satisfaction in terms of the safety-problem in rail facilities and trains. Besides particular customer characteristics and their requirements the significance of diverse models of customer satisfaction are being indicated. Additionally the norm DIN EN ISO 13816 depicts fundamental elements of common customer demands regarding the service performance in the local passenger transport. These core statements are general conditions for the determination of customer satisfaction and safety sensation of passengers.

The methodology of meaningful and applicable surveys of sensitivities to the passenger satisfaction could take place due to a discreet usable tool. Systematic surveys of passengers could be implemented with minimal/ negligible personal and material expenses. Evaluation and relationship normally take place with support of a database modelling.

For optimisation of data utilisation and analysis, the processing of the following project issues is essential:

Methods of customer voice collection only allows snapshots	➔ **Knowledge gap will be closed by permanent capturing of customer voice**
Safety sensations are simply cursory collected and described	➔ **Questions will be stated more precisely and interrogation will be refined**
Transmission and analysis of data collection only takes place case by case	➔ **Ensuring a permanent data transmission and database evaluation**

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