



POLICY BRIEF



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IMPROVING PASSENGERS' EXPERIENCE IN PUBLIC TRANSPORT

*METPEX stands for **ME**asurement **T**ool to determine the quality of **P**assenger **E**xperience; the METPEX project results will be used to inform policy makers in providing inclusive, passenger-oriented integrated transport systems that are accessible by all citizens.*

On going project

October 2015

INTRODUCTION

Objectives of the METPEX project

A holistic understanding of passenger experience is critical to develop and support transport accessibility. Whilst previous research has focused on different aspects of passenger experience, the diversity of tools developed limits their usefulness, effectiveness and transferability. Taking a holistic approach to the study of the passenger experience will provide a bridge between transport, sustainability, design, accessibility and land use; acknowledging the central importance of mobility to quality of life.

The METPEX project developed an inclusive passenger experience measurement tool for European transport providers, passenger groups and municipalities validated through its use across eight sites of varying transport complexity. Its development was informed by the consortium's understanding that data collection methods themselves have to be inclusive. The data collected enabled the creation and dissemination of service quality and accessibility benchmark indicators. Through its deployment the METPEX tool has far reaching impact in terms of providing more grounded intelligence to inform transport design, accessibility, land use and sustainability, and ultimately improve mobility and quality of life for EU citizens.

Scientific approach /

The primary objective of the METPEX project is to develop, validate

and evaluate a standardised tool to measure passenger experience across whole journeys. This will be used ultimately, to inform policy makers in providing inclusive, passenger-oriented integrated transport systems that are accessible by all citizens.

Specific S&T objectives include:

- To develop an integrated approach to the measurement of the whole journey passenger experience that takes into account human (physiological, perceptual, cognitive, sensory and affective) socioeconomic, cultural, geographic and environmental factors.
- To assess the costs of ‘inaccessible transport’ for different sectors of society (such as those from low income groups, rural communities, the elderly, disabled and those with lower levels of literacy).
- To assess the extent to which the measurement of the passenger experience can be used to drive innovation and attention to transport quality from the customer’s perspective in the transport industry.
- To evaluate the passengers experience from different regions of Europe and to support the integration of regional transport networks into an European transport network
- To facilitate the harmonization of travel behavior research and analysis across European Union Member States

EVIDENCE AND ANALYSIS

The Need to determine a set of key performance indicators

KPIs are measuring tools focused on those aspects related to company performance that are key to its success, both today and in the future. In other words, KPIs indicate what companies should do to increase performance in a significant way.

Due to their immediacy in conveying key messages to stakeholders, the use of indicators is by far the commonest approach in evaluation and policy-making ambits in the transport sector. Several transport-related indicators have been extensively developed over the past several decades in order to assess a variety of aspects related to transport systems. Indeed, they represent the most popular method used in professional practice for example to monitor and evaluate public transport operations, service quality, the achievement of socially desirable goals or the extent of environmental impacts.

Focusing on public transport in cities, as explains Dhingra (2011) “Measuring Public Transport Performance”¹ document, in order to improve and manage a service, one has to be able to measure it. If we want to make public transport services attractive, they not only need to be planned, operated and marketed well, they also need to be measured and monitored on a continual basis. For this purpose, performance indicators are the key.

KPI in public transport can explain different approach in transport management.

¹Chhavi Dhingra. „Measuring Public Transport Performance”. Lessons for Developing Cities Sustainable Urban Transport. Technical Document # 9 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). December 2011.

One of them is the operating efficiency (measuring aspects such as load factor or cost-per-vehicle-kilometre). However, METPEX indicators reflect the user experience (rider comfort, travel speed and reliability, affordability, integration and satisfaction). User-oriented indicators are important for developing public transit systems that respond to user demands and so are able to attract even choice travellers.

Which are the METPEX defined key performance indicators

After selecting a group of Super quality indicators that include all those simple quality variables extract from the METPEX study; “A comprehensive set of quality and accessibility indicators for transport services” from the survey performed and tested during the project, they have been validated according to the criteria selected in the METPEX study: “Definition of the evaluation criteria”, is proving that they could be applicable to any country and city and could be used by stakeholders, providing the level of quality of a transport system.

A set of fourteen (14) Super Quality Indicators has been created, making possible their use in transport activities by operators, transport authorities or even users to evaluate the quality of the whole system.

	<i>a. Measurable</i>	<i>b. Specific</i>	<i>c. Timely</i>	<i>d. Used</i>	<i>e. Independent</i>	<i>f. Useful</i>	AVERAGE VALUE
SQL-1: Accessibility to transport services and infrastructures	3	1	2	1	1	1	2.53
SQL-2: Availability, adequacy and quality of pre-trip and travelling information	3	1	2	2	1	1	2.73
SQL-3: Safety and Security on board, interchanges and waiting spaces	3	1	3	1	1	1	2.86
SQL-4: Adequacy and quality of infrastructures	3	1	3	2	1	1	3.06
SQL-5: Travel experience on board	3	1	3	2	1	1	3.06
SQL-6: Reliability of services	1	1	2	2	1	1	2.23
SQL-7: Value for money	2	1	3	2	1	1	2.81
SQL-8: Availability of ticketing options	3	1	2	1	1	1	2.53

and fares							
SQI-9: Comfort of facilities and/or vehicles	3	1	3	1	1	1	2.86
SQI-10: Satisfaction for users of motorised private transport means	2	2	2	5	2	1	3.75
SQI-11: Satisfaction of specific needs for different users groups	3	3	2	5	1	1	4
SQI-12: Possibility and easiness of intermodal journeys	2	1	2	2	2	1	2.82
SQI-13: Availability of services	2	1	2	2	1	1	2.48
SQI-14: Staff helpfulness and behaviour	3	1	2	2	1	1	2.73

Table 1: Summary evaluation level of each SQI attending established criteria.

POLICY IMPLICATIONS AND RECOMMENDATIONS

Using scientific data to measure the passenger satisfaction for the holistic measurement of the whole journey in public transport; what indicators should be used

Once defined the set of indicators that would attend to the quality objectives followed with the campaign developed in each city, we must evaluate if the indicator works and whether its value gives relevant information in order to take any decision. Not all indicators may be reviewed with the same frequency, it is necessary to determine when reviewing each to redefine it, improve it or remove it. Indicators should be assigned to the different areas of the whole system. Not all indicators affect equally to all areas, it is necessary to assign to each section their particular indicators. Other aspect factor to consider is whether this indicator could be compared with another one and, additionally, if it gives to the evaluator some guidelines to determine what may be our response to one or another situation. The most common system to evaluate the use of some objectives/KPIs is the SMART (Specific, Measurable, Achievable, Realistic, Time-related) criteria. In fact, it is a very useful system to give real dimension and developing a self-analysis that allows us to see if we have the resources to undertake guarantees in a project. The SMART criteria are focused on orienting in defining objectives

that are measurable and defining which KPIs that are credible and can be monitored and managed.

Nevertheless, other specific criteria could be defined in each system, to evaluate the validity of an indicator to provide enough information to the whole system.

For the specific case of quality measurement in a transport system, criteria selected reflect that an indicator should/must be:

a. Measurable:

There are feasible and practical methods to quantify the indicator

If two people (responsible authorities/operators, etc.) would obtain the same value when quantifying the indicator.

b. Specific:

An indicator measures only a certain design element (output, outcome or impact) that it is intended to measure and none of the other elements in the design.

It captures the essence of the desired result by clearly and directly relating to the achievement of an objective.

The indicator is precisely (not vaguely) formulated. The indicator clearly and directly relates to the outcome. It is described without ambiguities. Parties have a common understanding of the indicator.

The indicator must be able to be translated into operational terms.

c. Timely:

The indicator is attached to a time frame. The indicator should state when it will be measured.

Monitoring is not open-ended but allows change to be tracked at the desired frequency for a set period.

The indicator is able to reflect changes. It can be reported at the requested time.

It evaluates whether there is a need for a more frequent measurement or a less frequent measurement for the indicators being considered.

d. Indicator used in other studies:

According to bibliography from *D5.1 "The METPEXtool in relation with the state of the art on transport indicators"*, there is a great amount of indicators already evaluated and commonly used by transport operators or policy makers. This set of indicators has already been tested and could be considered as suitable for a correct evaluation of performance in passenger's mobility.

- Used in a specific country in a theoretical level (used in some studies or recommendations)
- Not used yet.

e. Independent from other indicators:

A hard statistical process has been developed to demonstrate independence of indicator but from an expert eye, indicators could

seem interdependent or could be easily explainable if combined. Additionally main strengths and weaknesses of each KPI can be highlighted

f. Useful

The indicator follows the next criteria:

- The indicator addresses the area considered and at least one aspect characteristic of this.
- The indicator provides needed information by which decision makers can evaluate the current status and take the appropriate decision for improvement.
- The indicator is considered relevant by those that define strategy for or/and policy to or/and manage the addressed area.
- The indicator addresses the aspects that could support the improvement of provided services or products offered.
- The indicator can be used by the stakeholders involved the addressed area and located on a large geographical zone.

RESEARCH PARAMETERS

Objectives of the research The objectives of the research are to define a set of indicators that could provide a scientifically documented approach to the measurement of holistic passenger experience of the journey in public transport.

**Scientific approach
/methodology of METPEX
research study**

The objective of the analysis is the comparison of the indicators defined in METPEX study, by considering the whole dataset with those that could be derived by selecting only the observations pertaining to one city, or to a subset of cities. It is expected that the indicators coming out from the two different analyses are not changing too much, especially if the number of elements of the selection is rather high. This stability analysis is therefore a form of validation of some of the indicators proposed already during the METPEX implementation, in order to understand to which extent the specificities of the eight METPEX cities affected our previous results, and ultimately to assess their robustness and applicability outside the METPEX experimental framework. Such activity is also at the core of the development of a benchmark analysis of the performances of transport services across different sites based on the use of such indicators, since sufficiently stable indicators would ensure a sound

comparison among cities.

PROJECT IDENTITY

PROJECT NAME	<i>MEasurement Tool to determine the quality of Passenger EXperience (METPEX)</i>
COORDINATOR	Professor Andree Woodcock, University of Coventry,
CONSORTIUM	<ul style="list-style-type: none">• Coventry University (UK) (Project coordinator)• Interactions Limited (Ireland)• Signosis sprl. (Belgium)• Instituto Tecnológico del Embalaje, Transporte y Logística (Spain)• Zurcher Hochschule fur Angewandte Wissenschaften (Switzerland)• Eurokelis (Italy)• Politecnico di Torino (Italy)• Anaptyxiaki Grevenon-Anaptyxiaki Anonimi Etaireia (Greece)• Kungliga Tekniska Hogskolan (Sweden)• Integral Consulting R&D (Romania)• Federation Internationale de l' Automobile (France)• VTM-Consultores em Engenharia e planeamento Lta (Portugal)• Smart Continent LTUAB (Lithuania)• F.K Liotopoulos kai SIA EE (Greece)• Efstratios Arampatzis monorposopi EPE (Greece)• Roma Servizi per la Mobilita SRL (Italy)
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BUDGET	EU contribution: 2.699.074€.
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FURTHER READING	<ol style="list-style-type: none"><i>METPEX. 2015. "D5.1 - "The METPEX tool in relation with the state of the art on transport indicators"</i><i>METPEX. 2015. "D5.2 - "A comprehensive set of quality and accessibility indicators for transport services"</i><i>The KPI Institute. 2013. "On Key Performance Indicators (KPIs)".</i> [http://www.smartkpis.com/key-performance-indicator-KPI]<i>QUATTRO. 1998. Final Report - Synthesis and recommendations. European Commission - Transport RTP Program - EU 4th Framework.</i>