Deliverable 5.3

"TESTING THE INDICATORS AND DEVELOPING BENCHMARKS"
Publishable summary

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"TESTING THE INDICATORS AND DEVELOPING BENCHMARKS"

Summary details

Task 5.3 have tested indicators provided in task 5.2, in order to validate them for us by different stakeholders and transport authorities in the cities where the tool was tested. This activity reaches the twofold goal of clarifying the strengths and weaknesses of each proposed indicator. To this effect, indicators have been evaluated through a methodology that integrates aspects included in a SMART (Specific, Measurable, Achievable, Realistic and Time-bound) test. Other possible criteria coming from partners knowledge have also been used in order to obtain a final set of Super Quality Indicators that would be useful for stakeholders involved.

Purpose

The purpose of this Deliverable is to give stakeholders some guidelines to evaluate quality performance through a set of tested Super Quality Indicators.

1) Test indicators provided in D5.2 in order to validate them.
2) Obtain a final set of Super Quality Indicators (SQI) that would be useful for stakeholders involved.
3) Clarify the strengths and weaknesses of each proposed indicator.
4) Evaluate SQI through a SMART (Specific, Measurable, Achievable, Realistic and Time-bound) methodology combined with other possible criteria coming from partners knowledge.

Method

Attending the mentioned aspects, Task 5.3. includes firstly the definition of KPI concept and its use in Public Transport monitoring. Secondly, indicators extracted from Task 5.2. have been analysed in order to test the stability for benchmarking purposes. After that, indicators were filtered and grouped in accordance with the previous definitions of a KPI, obtaining a set of Super Quality Indicators (SQI). Finally the SQIs have been evaluated using a set of predefined criteria. Finally, this Task includes an additional cluster analysis of the WP4 survey.

KPIs are measuring tools focused on those aspects related to company performance that are key to its success, both today and in the future. Not all performance metrics have to be KPIs.

- Successful KPIs meet several criteria:
- They are based on unambiguous consistent business processes each with a clear purpose.
- The result of each underlying process is measurable either by quantity or quality.
- The company can define a "good" vs. a "bad" result.
- The results are actionable; management can have a positive impact on the result by adjusting business operations and/or management decisions.

Performance evaluation is nowadays used by all agents involved in transport activities for different purposes:

- Reporting public transport performance to the authorities and public.
- Monitoring service improvements, assessing past interventions, attracting more riders and for increasing the appeal of public transport.
- Diagnosing problems and the health of the system, making course corrections and refining strategy.
- Incentivizing quality improvements.
- Responding to user feedback.
- Providing decision making bodies with accurate information to support the needed actions for investments, budgeting, etc.
- Providing the public with information on transit performance so they can choose it and use it.
- Setting service standards.
- Aiding internal communications and management.
- Noting community benefits.

List of Super Quality Indicators (SQI)

Considering all the mentioned aspects, Indicators coming from D5.2. have been reduced to 14 Super Quality Indicators (SQI):

SQI-1: Accessibility to transport services and infrastructures.

SQI-2: Availability, adequacy and quality of pre-trip and traveling information.

SQI-3: Safety and Security on board, interchanges and waiting spaces.

SQI-4: Adequacy and quality of infrastructures.

SQI-5: Travel experience on board.

SQI-6: Reliability of services.

SQI-7: Value for money.

SQI-8: Availability of ticketing options and fares.

SQI-9: Comfort of facilities and/or vehicles.

SQI-10: Satisfaction for users of motorised private transport means.

SQI-11: Satisfaction of specific needs for different users groups.

SQI-12: Possibility and easiness of intermodal journeys.

SQI-13: Availability of services.

SQI-14: Staff helpfulness and behaviour.

Criteria to evaluate a SQI

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 measureble 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:

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.

Levels of grading for evaluation may be considered:

1. Directly measureable (the indicator requires the measurement of only one variable).

2. Easy to calculate (the indicator requires the measurement of few variables).

3. Less easy to calculate (the indicator requires the measurement of many variables).

4. Non-measurable

Specific: An indicator measures only the design element (output, outcome or impact) that it is intended to measure. 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.

Levels of evaluation as specific:

1. It is clear by itself, no place to confusion

2. Other aspects of service have to be considered to understand it

3. Not clear, very difficult to understand or easy to misunderstand

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.

Levels of evaluation as "time-related":

1. Periodicity clearly expressed

2. Time-relation could be understood or supposed

3. Not time related

Indicators used in other studies: According to bibliography from D5.1., many indicators have been already evaluated and commonly used by transport operators or policy makers. In that case, indicators could be considered as already tested and suitable for a correct evaluation of performance in passenger's mobility.

Levels of evaluation as "already used":

1. Used in different countries at an operational level.

2. Used in different countries at a theoretical level.

3. Used in a specific country at an operational level.

4. Used in a specific country at a theoretical level.

5. Not used yet.

Independent from other indicators: A hard statistical process has been developed to demonstrate the independence of an indicator but from an expert eye, indicators could seem interdependent or could be easily explainable if combined.

Levels of evaluation as "independence":

1. Indicator can't be expressed as a combination of other different indicators

2. Indicator could be calculated by using the same data used for other indicators.

3. Indicator can be expressed as a combination of other different indicators

Useful: The indicator follows the next criteria: Addresses the area considered and at least one aspect characteristic of this; Provides information which decision makers can use to evaluate the current status and take the appropriate decision for improvement; Is considered relevant by those that define strategy

for or/and policy to or/and manage the addressed area; Addresses the aspects that could support the improvement of provided services or products offered; Can be used by the stakeholders involved the addressed area and located on a large geographical zone.

Levels of evaluation as "useful":

1. The indicator fulfils all the mentioned criteria.

2. The indicator fulfils more than half of the mentioned criteria.

3. The indicator fulfils less than half of the mentioned criteria.

4. The indicator doesn't fulfil any of the mentioned criteria.

Example of evaluations of a SQI

In this case is presented the evaluation of SQI 2: "Availability, adequacy and quality of pre-trip and traveling information"

Measurable: SQI-2 considers many different variables to define the information received by the user previously and during his trip. However, the variables that should be considered are clearly defined in the indicator itself. Some of them are completely and directly measured, but others can require a more difficult accounting method. We can consider that this SQI is level 3: Less easy to calculate (the indicator requires the measurement of many variables)

Specific: SQI2 is clearly defined and refers specifically to the information given to the user. It is focused on these aspects and does not include other additional information of the travel, as can be seen in the entire variables that compose this SQI. Any stakeholder interested in this SQI can understood it in the same way, without ambiguities. It is considered as a level 1 SQI: It is clear by itself, no place to confusion.

Timely: In the title of the indicator is specified when should be measured, in this case before starting each trip and during the time spent on it. It is very sensitive to any change in the information system, so any modification could be easy detected with this indicator. It does not specify the periodicity of measurement, it could depend on the frequency of satisfaction surveys, due to the fact that some variables could be measured using them. SQI-2 is considered as level 2 regarding this aspect: Time-relation could be understood or supposed.

Indicator used in other studies: Reviewing information collected on D5.1., SQI-2 is present in different studies and approaches. Some examples of them are: Tyrinopoulos and Aifadopoulou (2008), Nathanail (2008), QUATTRO project and BEST project. In this case, SQI-2 is evaluated as level 2: Used in different countries in a theoretical level (used in some studies or recommendations)

Independent from other indicators: None of the remaining indicators can express the aspects included in SQI-2. It is not possible to define the availability, adequacy and quality of pre-trip and traveling information by combining any of the 13 remaining SQI. This is due to the fact that a previous

hard statistical process has been developed to demonstrate independence of indicator. Therefore, we can consider that the indicator cannot be expressed as a combination of other different indicators, being a level 1 SQI.

Usefulness: SQI-2 is very useful for transport operators, policy makers, transport administrators and also final users. It fulfils all the aspects considered to define an indicator as useful (Level 1).

Results

Criteria have been rated in 3 to 5 levels, giving a value for each of them, attending to the accomplishment of the established conditions attending to an expertise criteria.

Criteria	Levels
a. Measurable	1-4
b. Specific	1-3
c. Timely	1-3
d. Objective	1-3
e. Used	1-5
f. Independent	1-3
g. Useful	1-4

Regarding the results from this analysis, and the score give for every criterion, each SQI can be ranked using a final score out of 6. This ponderaton has been done by adding each chosen level divided by the total possible levels (it is necessary to be aware that a lower value is a better option).

In the next table it is presented a summary of the values previously assigned to each SQI, according to each criteria, and an average value calculated as explained in chapter 7.

	a. Measurable	b. Specific	c. Timely	d. Used	e. Independent	f. Useful	AVERAGE VALUE
SQI-1	3	1	2	1	1	1	2.53
SQI-2	3	1	2	2	1	1	2.73
SQI-3	3	1	3	1	1	1	2.86
SQI-4	3	1	3	2	1	1	3.06
SQI-5	3	1	3	2	1	1	3.06
SQI-6	1	1	2	2	1	1	2.23
SQI-7	2	1	3	2	1	1	2.81
SQI-8	3	1	2	1	1	1	2.53
SQI-9	3	1	3	1	1	1	2.86
SQI-10	2	2	2	5	2	1	3.75
SQI-11	3	3	2	5	1	1	4
SQI-12	2	1	2	2	2	1	2.82
SQI-13	2	1	2	2	1	1	2.48
SQI-14	3	1	2	2	1	1	2.73

Conclusions

Regarding score obtained by SQIs it is remarkable that almost all are scored below 3 points (mean value), that is, almost all of them fulfil all criteria with a value above mean.

Only 2 SQI ("SQI-10: Satisfaction for users of motorised private transport means" and "SQI-11: Satisfaction of specific needs for different users groups") are considerably above 3 points. They are highly penalised by the use of the indicator before (in previous studies) or the independence, but in both cases their evaluation don't overcome 4 points.

Best SQI according to defined criteria is "SQI-6: Reliability of services", this is mainly due to the fact that is the criterion with best measurability level, which highly affects its final value.