The Attica Tollway Operations Authority KPI performance measurement

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The public generally objects paying tolls

- Objection by the public to the implementation of a toll regime is a major risk for all toll road projects.
- In the case of DBFO projects this objection may affect significantly the project revenues.
- Financing becomes very difficult
The Public Opposition Experience
Q: Are there any approaches available to mitigate the risk of objecting paying tolls?

The answer in our case:
Offer to the users services that are worth their money.
Provide High Level of Service.
What is Level of Service?

Level of Service (LoS) determines the effectiveness (quality) of transportation.
For the “USERS” in an urban environment

Mobility, Safety and Convenience are key factors for the everyday life of those users.
High Level of Service (LoS)

High LoS in every modern Tollway is ensured by the development & application of an integrated monitoring / measuring system of Operators performance.
KPI Advantages

**Efficiency**
Attention to the actions and resources

**Improvement**
Improves efficiency of the system

**Effectiveness**
Correlates the outcome of policies to the actions

**Communication**
Communicates useful information
KPI Characteristics

Sensible

Possible to be measured, by a predefined and scientific based method. Data must be available on time.

Measurable

Truly representative of the quantities & characteristics that they are intended to represent, as well as to provide useful information for the decision makers.

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KPI Characteristics

Linked into systems that allow feedback of information into the decision-making process.

Verifiable

Be possible to check that the values of the data or indicators presented are reported accurately.

Interlinked
Attica Tollway Project
Attica Tollway
Athens, Greece

OMC: Operation and Maintenance Center
TB: Technical Base
A major Concession Project, developed in stages

- 65 km Urban Motorway

The facts

- AADT (2009): 307,300 toll transactions
- Number of Toll Stations: 39
- Number of Toll Lanes: 195

<table>
<thead>
<tr>
<th>Lanes</th>
<th>Capacity</th>
<th>Total Lanes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toll Collectors</td>
<td>300 vehicles/hour</td>
<td>140</td>
</tr>
<tr>
<td>e-PASS</td>
<td>800 vehicles/hour</td>
<td>55</td>
</tr>
</tbody>
</table>

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Towards LoS and Business Excellence

- **Identify the need:** A mechanism protecting “value” of money for users
- **Set the target:** Innovative services and beyond any competition for Greece
- **Design & Implement services:** Procedures-manuals,
- **Evaluate the services:** Mystery Shopping, Surveys
What Services are evaluated in attica Tollway?

• Safety of users
• Incident Management
• Maintenance
• ETC Performance / Penetration
• Overall Customer Satisfaction
LoS Considerations on Attica Tollway

- Interference by a dense and congested urban road network
- Flat & Open Toll Regime (current toll 2,70 €) makes users to be even more demanding
- Traffic volumes much higher than expected, especially in the central section
Time Savings is the Key to Use of the Road

Time savings as stated by users (%):

- Less than 15 minutes: 15.1%
- Between 16 and 30 min: 55.2%
- Between 31 and 45 min: 13.8%
- Between 46 and 60 min: 12.9%
- More than 60 min: 3.0%
Implementation of KPI’s

• Strategy definition at the Operational level
• Discrete set of Indicators for each operational activity
• Target Values for each indicator
• Time based Indicators Evaluation
• Problem recognition and corrective actions
Attica Tollway – KPI Strategic Map

Level III: Output
- Concession Company
- Shareholders
- Users
- Stakeholders

Level II: Productive
- Road Maintenance
- Traffic
- Tolls
- Commercial Policy
- Customer Support

Level I: Administrative
- Financial
- Purchasing
- HR
- IT
- Building Availability
- Legal

ONLY 2 KPIS ARE CONTRACTUAL OBLIGATION
Indicative Tolls KPI of Attica Tollway

- Toll lane processing capacity
- Toll collection cash discrepancy
- Counterfeit or worn banknotes/coins
- Non Payment Form (NPF)
- ETC volume
Indicative Traffic and Maintenance KPIs

- Response time to incidents indicators
- Lane closure due to road maintenance indicator
- Incident handling indicators
- Congestion indicators
- Users’ safety indicators
Presentation of an Indicator

Lane closure due to road maintenance

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HR KPI of Attica Tollway

- Employees turnover indicators
- Employees satisfaction indicator
- Employees presence indicator
- Training indicators
# Attica Tollway – KPI Values

<table>
<thead>
<tr>
<th>Traffic &amp; Maintenance KPI</th>
<th>Jul 07</th>
<th>Aug 07</th>
<th>Sep 07</th>
<th>Oct 07</th>
<th>Nov 07</th>
<th>Dec 07</th>
<th>Jan 08</th>
<th>Feb 08</th>
<th>Mar 08</th>
<th>Apr 08</th>
<th>May 08</th>
<th>Jun 08</th>
<th>Jul 08</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.D. Response time to incidents (minutes)</td>
<td>0:03:31</td>
<td>0:03:04</td>
<td>0:03:14</td>
<td>0:03:07</td>
<td>0:03:14</td>
<td>0:03:14</td>
<td>0:03:05</td>
<td>0:03:16</td>
<td>0:03:06</td>
<td>0:02:50</td>
<td>0:03:07</td>
<td>0:02:52</td>
<td>0:02:55</td>
</tr>
<tr>
<td>Lane closure due to road maintenance (Lanes x Km x Minutes)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>125,99</td>
<td>146,95</td>
<td>168,95</td>
<td>205,87</td>
<td>383,00</td>
<td>672,09</td>
<td>449,65</td>
<td>268,71</td>
</tr>
<tr>
<td>Congestion (Meters of queue)</td>
<td>129,500</td>
<td>9,350</td>
<td>142,960</td>
<td>179,362</td>
<td>236,000</td>
<td>192,350</td>
<td>136,750</td>
<td>275,300</td>
<td>312,850</td>
<td>180,564</td>
<td>171,092</td>
<td>249,056</td>
<td>151,350</td>
</tr>
<tr>
<td>Customers complaints regarding traffic services</td>
<td>657</td>
<td>553</td>
<td>492</td>
<td>739</td>
<td>576</td>
<td>553</td>
<td>416</td>
<td>2845 (Snow)</td>
<td>541</td>
<td>440</td>
<td>604</td>
<td>1754 (Fire)</td>
<td>716</td>
</tr>
<tr>
<td>Effectiveness of preventive Road maintenance (maintenance man-hour effort, Exceptional/Scheduled)</td>
<td>8,40%</td>
<td>5,43%</td>
<td>7,31%</td>
<td>14,24%</td>
<td>13,31%</td>
<td>10,09%</td>
<td>10,54%</td>
<td>11,38%</td>
<td>9,53%</td>
<td>12,94%</td>
<td>11,34%</td>
<td>7,70%</td>
<td>12,90%</td>
</tr>
<tr>
<td>Effectiveness of preventive E &amp; E/M maintenance (maintenance man-hour effort, Exceptional/Scheduled)</td>
<td>69,49%</td>
<td>85,19%</td>
<td>61,29%</td>
<td>61,29%</td>
<td>58,73%</td>
<td>63,93%</td>
<td>53,85%</td>
<td>56,25%</td>
<td>56,25%</td>
<td>53,85%</td>
<td>53,85%</td>
<td>53,85%</td>
<td>63,93%</td>
</tr>
</tbody>
</table>
# Attica Tollway – KPI Values

<table>
<thead>
<tr>
<th>KPI Values</th>
<th>Jul 07</th>
<th>Aug 07</th>
<th>Sep 07</th>
<th>Oct 07</th>
<th>Nov 07</th>
<th>Dec 07</th>
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<th>Feb 08</th>
<th>Mar 08</th>
<th>Apr 08</th>
<th>Mei 08</th>
<th>Jun 08</th>
<th>Jul 08</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tolls-KPI</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toll lane processing capacity (Manual – Metamorfosi East)</td>
<td>334</td>
<td>306</td>
<td>320</td>
<td>329</td>
<td>306</td>
<td>320</td>
<td>306</td>
<td>324</td>
<td>337</td>
<td>315</td>
<td>313</td>
<td>325</td>
<td>339</td>
</tr>
<tr>
<td>Toll lane processing capacity (ETC– Metamorfosi East)</td>
<td>700</td>
<td>516</td>
<td>790</td>
<td>752</td>
<td>750</td>
<td>713</td>
<td>751</td>
<td>791</td>
<td>752</td>
<td>748</td>
<td>738</td>
<td>758</td>
<td>706</td>
</tr>
<tr>
<td>Toll collection cash discrepancy (USD / 100 000 USD)</td>
<td>1.00</td>
<td>9.00</td>
<td>7.00</td>
<td>6.00</td>
<td>4.00</td>
<td>8.00</td>
<td>5.00</td>
<td>7.00</td>
<td>7.00</td>
<td>3.00</td>
<td>7.00</td>
<td>8.00</td>
<td>6.00</td>
</tr>
<tr>
<td>Non Payment Form (NPF)</td>
<td>1278</td>
<td>953</td>
<td>1346</td>
<td>1394</td>
<td>1370</td>
<td>1138</td>
<td>1223</td>
<td>1249</td>
<td>1461</td>
<td>1332</td>
<td>1386</td>
<td>1371</td>
<td>1329</td>
</tr>
<tr>
<td>ETC volume</td>
<td>38.38%</td>
<td>36.46%</td>
<td>40.30%</td>
<td>42.58%</td>
<td>43.07%</td>
<td>41.61%</td>
<td>43.08%</td>
<td>42.85%</td>
<td>42.65%</td>
<td>43.24%</td>
<td>43.31%</td>
<td>42.42%</td>
<td>41.68%</td>
</tr>
<tr>
<td>Manually issued receipts</td>
<td>385</td>
<td>445</td>
<td>393</td>
<td>437</td>
<td>335</td>
<td>272</td>
<td>247</td>
<td>344</td>
<td>323</td>
<td>398</td>
<td>355</td>
<td>411</td>
<td>411</td>
</tr>
<tr>
<td>Telephone customer center indicators</td>
<td>2.94%</td>
<td>3.27%</td>
<td>3.03%</td>
<td>3.17%</td>
<td>3.00%</td>
<td>4.03%</td>
<td>2.73%</td>
<td>2.94%</td>
<td>3.64%</td>
<td>4.21%</td>
<td>4.32%</td>
<td>3.68%</td>
<td>3.78%</td>
</tr>
</tbody>
</table>
Typical Indicator’s measurement

Report of Attica Tollway

Indicator’s Name and Unique Code: Lane closure due to road maintenance indicator (KYK05)

Description and Purpose of the Measurement:
Records the continuous availability of the MW and depicts the influence of maintenance works on traffic loads with the aim of:
1. Minimizing lane closure with high incidence rate
2. Minimizing traffic congestion and consequently avoiding driver disturbance
3. Improving maintenance planning
4. Maintaining high level of safety in the MW.

Input Data Used

<table>
<thead>
<tr>
<th>no</th>
<th>Date of closure</th>
<th>Data Description</th>
<th>Responsible</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Date of closure</td>
<td>Sector Manager of Traffic Management Division</td>
<td>Daily</td>
</tr>
<tr>
<td>2</td>
<td>The Lane (LLMLRLML) that closed (%)</td>
<td>Sector Manager of Traffic Management Division</td>
<td>Daily</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>The product of time in hours of lane closure times the length in km.</td>
<td>Sector Manager of Traffic Management Division</td>
<td>Daily</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Maintenance works Requester (AD, Roadside, Mobile Telephony, etc.)</td>
<td>Sector Manager of Traffic Management Division</td>
<td>Daily</td>
<td></td>
</tr>
</tbody>
</table>

Short Data processing description:
The above information is recorded in the file Lane closures. The data is sorted by month and the lane closure indicator (\(B\)) is summed up for each lane. The total hours of closed lanes is the total of the sum of all lanes (\(\sum B\)).

Mathematical expression of the indicator’s calculation:
\[ \sum B_j \] where \(j=LLMLRLML\) and \(i=1,2,3,4\) and \(j=1,2,3,4\) the day of the month.

Results (Output)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Dec 07</th>
<th>Jan 08</th>
<th>Feb 08</th>
<th>Mar 08</th>
<th>Apr 08</th>
<th>May 08</th>
<th>Jun 08</th>
<th>Jul 08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Lane</td>
<td>63.69</td>
<td>72.00</td>
<td>81.18</td>
<td>115.25</td>
<td>231.85</td>
<td>346.27</td>
<td>318.08</td>
<td>69.58</td>
</tr>
<tr>
<td>Middle Lane</td>
<td>3.00</td>
<td>11.33</td>
<td>10.53</td>
<td>26.33</td>
<td>35.075</td>
<td>214.625</td>
<td>43.12</td>
<td>26.00</td>
</tr>
<tr>
<td>Right Lane</td>
<td>89.20</td>
<td>62.62</td>
<td>69.32</td>
<td>94.19</td>
<td>116.075</td>
<td>111.195</td>
<td>88.95</td>
<td>152.12</td>
</tr>
<tr>
<td>Total</td>
<td>125.99</td>
<td>146.95</td>
<td>168.95</td>
<td>205.87</td>
<td>383.00</td>
<td>672.09</td>
<td>449.62</td>
<td>268.71</td>
</tr>
</tbody>
</table>

Comments

Target Value: 220
Target achievement by: 03/2009

Next Indicator’s measurement: 20/03/2008
What do “customers” think?

Let’s demonstrate public’s opinion
Demonstrable Results

- Increase of ETC use, from 36% in 2005 to 50% in 2010
- Subscribers' increase, from 143,000 distributed transponders in 2005 to 389,000 in 2010,
- The customers satisfaction remained at a very high level despite the high increase of traffic
- Increase of the operating procedures from 15 to 47
Customer Satisfaction: 
Feeling safe while driving on Attica Tollway (%) 

92.7% of the users state that they are very & rather satisfied vs. 94.9% in 2008
Customer Satisfaction: Evaluation of patrolling levels (%)

Very satisfied: 70.3%
Reasonably satisfied: 19.0%
Not so satisfied: 2.6%
Not satisfied at all: 2.7%
Do not know/Do not have any opinion: 5.3%

91.9% of the users state that they are very & rather satisfied vs. 89.3% in 2008

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Customer Satisfaction: Evaluation of Toll Collectors (%)

- Very Satisfied: 90.3% (Mar 08), 88.4% (Mar 09)
- Satisfied: 8.7% (Mar 08), 9.0% (Mar 09)
- Not so much satisfied: 0.5% (Mar 08), 0.8% (Mar 09), 0.2% (Mar 08), 0.6% (Mar 09), 0.3% (Mar 08), 1.2% (Mar 09)
- Not at all: 0.2% (Mar 08), 0.6% (Mar 09)
- N/A: 0.3% (Mar 08), 1.2% (Mar 09)

97.4% of the users state that are satisfied from the toll collectors.

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Customer Satisfaction:
Evaluation of Call Center Services(%)
Positive opinion towards public campaigns [% - multiple responses]

- Seminars to school pupils for Road Safety Issues:
  - Mar-08: 70.5%
  - Mar-09: 78.2%

- First Aid Information & Seminars:
  - Mar-08: 46.8%
  - Mar-09: 54.5%

- Guidelines for safe driving on the motorway:
  - Mar-08: 41.8%
  - Mar-09: 46.7%

- Guidelines for safe driving:
  - Mar-08: 32.8%
  - Mar-09: 46.4%

- Information for car maintenance:
  - Mar-08: 24.3%
  - Mar-09: 33.4%

- None from the above:
  - Mar-08: 5.4%
  - Mar-09: 4.5%
Honors and Achievements

“Décibel d’ Or”
Mng &Reduction of Noise,
2003 -CNB

1st Prize
European Road Safety Award,
2005 -IRF

Global Road Achievement Award
Environmental Mitigation,
2008-IRF

1st prize for innovating development in GIS applications
2008-ERSI

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Industry Recognition

2009 IBTTA TOLL EXCELLENCE AWARD in the category of administration for our project “Monitoring the Success”.

2009 IBTTA Toll Excellence Awards
Conclusions

• By providing high LoS, Attica Tollway succeeded to change the initial negative behavior of users towards paying tolls
• Provision of services to users above and beyond contractual obligations, is not a waste of money
• Credible, verifiable and sophisticated monitoring systems evaluating services is recommended “Best Practice”
• Mystery shopping is not an “I got you” tool but it generates “peace of mind”
Thank you!

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