Real Estate Management of sacral buildings: Evaluation of repair and maintenance costs

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Content

- Defining the problem
- Approach
- Data collection
- First results
Motivation

- Changed conditions
- Maintenance of a great number of sacral buildings
- Decreasing revenues

Scope: Cost-optimized real estate management
Base of investigation

Sacral buildings:

• Public buildings for religious ceremonies as defined in Can.1214 CIC, Codex Iuris Canonici.

• 250 catholic churches
Problem statement

Superior goal:
How many buildings can be maintained by the diocese?

• What are the main cost influential factors?

Project:
Which data has to be collected? Which information is needed?

• Cost data
• Information about the buildings
Approach: Empirical survey

- Expert interviews
  - Questionnaire

Data collection

- Data

Statistics

- Cost Indicators

Transfer into practice

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## Collecting data

<table>
<thead>
<tr>
<th>Factor Groups</th>
<th>Indicators (examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building characteristics</td>
<td>geometry, year of construction, architectural style, towers, type and present condition of constructions, type, condition of technical installation, specific features like bells or organ,…</td>
</tr>
<tr>
<td>Utilization</td>
<td>standard and intensity of use, …</td>
</tr>
<tr>
<td>Location</td>
<td>region, topography, climate, market dynamics, …</td>
</tr>
</tbody>
</table>
Collecting cost data

Object-related repair and maintenance costs according to DIN 31051: “Fundamentals of maintenance”

4.1.2. Maintenance Service

4.1.3. Inspection

4.1.4. Repair

4.1.5. Improvement
Overview about cost data

Number of measures per building (N=28)
## Defining a cost structure

### Structure base on DIN 18960 “Running costs of building”

<table>
<thead>
<tr>
<th>Code</th>
<th>Cost</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Cost of capital</td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>Management costs</td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>Operating costs</td>
<td></td>
</tr>
<tr>
<td>350</td>
<td></td>
<td>Operation, inspection and maintenance</td>
</tr>
<tr>
<td>352</td>
<td></td>
<td>Inspection and maintenance of building construction</td>
</tr>
<tr>
<td>353</td>
<td></td>
<td>Inspection and maintenance of technical installation</td>
</tr>
<tr>
<td>400</td>
<td>Repair costs</td>
<td></td>
</tr>
<tr>
<td>410</td>
<td></td>
<td>Repair costs of construction</td>
</tr>
<tr>
<td>420</td>
<td></td>
<td>Repair costs of technical installations</td>
</tr>
<tr>
<td>421</td>
<td></td>
<td>Drainage, water and gas supply systems</td>
</tr>
<tr>
<td>422</td>
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<td>Heat supply systems</td>
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<tr>
<td>423</td>
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<td>Air treatment systems</td>
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<td>424</td>
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<td>Electricity supply</td>
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<td>425</td>
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<td>Telecommunications and other communications systems</td>
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<td>426</td>
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<td>Handling systems</td>
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<tr>
<td>427</td>
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<td>Function-related systems</td>
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<tr>
<td>440</td>
<td></td>
<td>Repair costs of furnishings and equipment</td>
</tr>
<tr>
<td>441</td>
<td></td>
<td>Furnishings and equipment</td>
</tr>
<tr>
<td>442</td>
<td></td>
<td>Works of art</td>
</tr>
</tbody>
</table>

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First Results

Cost per building [€*year], (N=28, 6 years)

Cost in refer to the building size [€/m³ BRI*year], (N=28, 6 years)
First Results

Repair cost (KG 410-441) in relation to cost for inspection and maintenance (KG 352-355), [€/m³ BRI*year], (N=28, 6 years)
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