eHealth expert’s attitude towards processes of digitization: contradictions between stakeholders

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IT based project success

**2003, UK**

16% of the total number of the implemented IS projects as **successful**

**2004, US**

Successful projects made about 34% of all projects implemented

**Prognostic estimations**

- about 31,1% of all implemented projects would be terminated even before their implementation
- about 52,7% of the projects would expend 189% of the allocated budget on average
Expenditure on IT on Health

- **US:**
  - The expenditure on information technologies (IT) in the health care sector increased from $21.6 billion in 2002 to the forecasted $40 billion in 2012–2014 (2011).

- **European Union**
  - Similar trends (2013)

- **Lithuania** has been developing its eHealth system since 2000 and has already spent about €40 billion during the recent 16 years.
  - Already in 2011, it was noted that no IS management processes were set up in the development of the eHealth system and no IS policies, no risk assessment and no incident monitoring were present and therefore some of the goals failed to be achieved and legal regulations were neglected in spite of the fact that the terms of delivery were extended twice.
Performance management for e.Health

Seeking the effectiveness
- To monitor and assess the development and outcomes of the ongoing processes
- To create indicators of the system evaluation.
- When selecting indicators for the general assessment system, it is essential to choose indicators and measurements applicable in recurrent situations.

Progress is reached in the sphere of “technical indicators”
- DeLone and McLean’s model of information systems success (Delone & Mc Lean, 2003).

- System quality
  • reliability, portability, user friendliness, understandability, effectiveness, maintainability, economy, verifiability

- Information quality
  • corresponds to content indicators.

- Service quality

- Progress is reached in the sphere of “technical indicators”
Problem and goal

**PROBLEM**
- New trends of supplementing technical indicators with those to correspond stakeholder needs have emerged.
- Stakeholder input is still not monitored and stakeholder potential to contribute systemically is still unacknowledged to identify additional, conceivable and acceptable assessment indicators.

The extent of research and endeavours to take into consideration stakeholders are growing both on national and international level

**GOAL**
- is to compile a corpus of indicators of eHealth development evaluation that would essentially reflect stakeholder approaches and complement technology associated and subject matter indicators of assessment of an eHealth system.
Methodology

- **Methods**
  - a secondary data analysis.
  - The primary study was a three-year study investigated the eHealth stakeholder network and stakeholder impact on eHealth development in Lithuania
  - interviews (59 interviews)

- **Organizations**
  - hospitals (10), health care centres (4), clinics (2),
  - private health care institutions (2),
  - private IT companies (4),
  - ministries (1), institutions under the Ministry (1),

- **Jog positions**
  - doctors (doctors (10) and nurses (8)),
  - specialists (IT specialists (10) and managers (9) of IT departments),
  - administration (managers (10), deputy managers (8) and advisors (4)),

- **Cities of Lithuania**
  - 10
Methodology

Analysis

- Interviews have been transcribed.
- The text of responses were grouped into categories and subcategories by means of quality data analysis software NVivo.

Some statistics:
- A total of 215 pages of text
- 523 coded notions
- Three generalized categories: human resources, financial resources and management resources.
- The most relevant topics were selected and arranged into a hierarchical system according to their importance.
### Numeric and percentage value of the codes

<table>
<thead>
<tr>
<th>Nr</th>
<th>Codes*</th>
<th>Count</th>
<th>Coverage**</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Quality of information</td>
<td>68</td>
<td>0.114%</td>
</tr>
<tr>
<td>02</td>
<td>Compatibility of technologies</td>
<td>68</td>
<td>0.114%</td>
</tr>
<tr>
<td>03</td>
<td>Funding</td>
<td>67</td>
<td>0.112%</td>
</tr>
<tr>
<td>04</td>
<td>Legal regulation</td>
<td>66</td>
<td>0.110%</td>
</tr>
<tr>
<td>05</td>
<td>Shortage of time</td>
<td>58</td>
<td>0.097%</td>
</tr>
<tr>
<td>06</td>
<td>Design</td>
<td>39</td>
<td>0.066%</td>
</tr>
<tr>
<td>07</td>
<td>Satisfaction</td>
<td>38</td>
<td>0.064%</td>
</tr>
<tr>
<td>08</td>
<td>Computer literacy</td>
<td>36</td>
<td>0.06%</td>
</tr>
<tr>
<td>09</td>
<td>Training</td>
<td>31</td>
<td>0.052%</td>
</tr>
<tr>
<td>10</td>
<td>Motivation</td>
<td>24</td>
<td>0.040%</td>
</tr>
<tr>
<td>11</td>
<td>Shortage of employees</td>
<td>18</td>
<td>0.031%</td>
</tr>
<tr>
<td>12</td>
<td>Management competences</td>
<td>10</td>
<td>0.017%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>523</td>
<td>0.877%</td>
</tr>
</tbody>
</table>
Sources (Respondents) clustered by word similarity
## Dominating statements by various respondent groups (key values are highlighted as stakeholder priorities)

<table>
<thead>
<tr>
<th>Nr</th>
<th>Codes</th>
<th>IT companies</th>
<th>Health care institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>In total</td>
<td>Doctors of health care institutions</td>
</tr>
<tr>
<td>01</td>
<td>Quality of information</td>
<td>8* (1,53%)</td>
<td>60 (11,47%)</td>
</tr>
<tr>
<td>02</td>
<td>Compatibility of technologies</td>
<td>5 (0,96%)</td>
<td>63 (12,05%)</td>
</tr>
<tr>
<td>03</td>
<td>Funding</td>
<td>3 (0,57%)</td>
<td>64 (12,24%)</td>
</tr>
<tr>
<td>04</td>
<td>Legal regulation</td>
<td>7 (1,34%)</td>
<td>59 (11,28%)</td>
</tr>
<tr>
<td>05</td>
<td>Shortage of time</td>
<td>22 (4,21%)</td>
<td>36 (6,88%)</td>
</tr>
<tr>
<td>06</td>
<td>Design</td>
<td>0 (0%)</td>
<td>39 (7,46%)</td>
</tr>
<tr>
<td>07</td>
<td>Satisfaction</td>
<td>0 (0%)</td>
<td>38 (7,27%)</td>
</tr>
<tr>
<td>08</td>
<td>Computer literacy</td>
<td>7 (1,34%)</td>
<td>29 (5,54%)</td>
</tr>
<tr>
<td>09</td>
<td>Training</td>
<td>1 (0,19%)</td>
<td>30 (5,74%)</td>
</tr>
<tr>
<td>10</td>
<td>Motivation</td>
<td>0 (0%)</td>
<td>24 (4,59%)</td>
</tr>
<tr>
<td>11</td>
<td>Shortage of employees</td>
<td>0 (0%)</td>
<td>18 (3,44%)</td>
</tr>
<tr>
<td>12</td>
<td>Management competences</td>
<td>2 (0,38%)</td>
<td>8 (1,53%)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>175 (33,46%)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>55 (10,52%)</td>
<td>468 (89,48%)</td>
</tr>
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</table>
Stakeholder problem distribution
**Design of e-health**

The minimum number of colors, information search in ≤ 3 clicks, paths, loading time, internal search option, HelpDesk, uniform design elements

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**Technological solutions**

(compatibility, database, IT penetration and scale, usability, quality, technology phase, properties, process alignment to digitalization)

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**Stakeholder driven criteria**

- Human resources
  - Individual attitudes
  - Competencies
- Financial resources
  - Direct investment
  - Savings
- Managerial resources
  - CEO competencies
  - Engagement
- Legal aspects
  - Coordination of regulation
  - Compliance
- Satisfaction with IT driven criteria
  - Quality of information
  - Process alignment to digitalization
  - Design

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**Stakeholder driven indicators**

- System quality
  - Informatio n quality
  - Service quality (objective and subjective)
- Use
- User satisfaction
- Net benefits

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Corresponding components of DeLone and McLean IS success model (2003)
Indicators and monitoring means
Conclusion

The research reveals that eHealth quality is assessed by stakeholders in terms of actual phenomena, i.e. design and technological solutions, in the first place.

Design is the most important criterion in eHealth implementation and has the most significant effect on the further use of the project

Distinction of respondent importance emphases has revealed characteristic limitation of stakeholder approaches.

- Such limitation clearly demonstrates that no individual stakeholder group is able to spotlight all possible problems in eHealth development.
- Thus, the more diverse approaches and stakeholders are timely involved into IT development the more effectively the development success may be controlled.
THANK YOU FOR YOUR ATTENTION

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