Critical Success Factors on Product Development Management in Brazilian Technology Based Companies

Sérgio Luis da Silva
José Carlos de Toledo
Daniel Jugend
Glauco H. S. Mendes

Federal University of Sao Carlos, Brazil
The Study: Critical Success Factors on Product Development: managing factors and practices that influence success and unsuccess development projects of new products

Firms: Small and Mid-Sized Technology Based Brazilian Companies

Sector: Medical and Hospital Equipment and Process Control Automation Equipment in State of São Paulo
CONCEPTS:

Technology Based Companies

Firms committed to the project, development and production of new products with high technology

Automation of Process Control

Firms that use technologies (electronics, software, mechatronics, among others) for controlling of many industrial process
CONCEPTS:

Medical and Hospital Equipment → Companies that develop and manufacture medical and hospital equipments

Small and Mid-Sized → Employ from 20 to 99 individuals (small companies); 100 to 499 (mid-sized)

(Brazilian Support Services to Micro and Small Companies - Sebrae)
This work was developed through **field research** with a sample that included 62 firms;

**Field research**: quantitative

**Structured questionnaire** had 64 close-ended questions about managing of product development, focusing on the analysis of existing factors in a product development considered successful and unsuccessful by firms.
RESEARCH METHOD

Used 2 structured questionnaires:

The same questionnaire was applied twice in each firm

The firms choose:
1 - product development project considered successful
1 - product development project considered unsuccessful

Each firm defined success and unsuccess from their own perception
RESULTS

Figure: The answers of success and unsuccess by firms

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>SUCCESS (QUESTIONNAIRES)</th>
<th>UNSUCCESS (QUESTIONNAIRES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Control Equipment</td>
<td>32</td>
<td>23</td>
</tr>
<tr>
<td>Medical Hospital Equipment</td>
<td>30</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>62</td>
<td>42</td>
</tr>
</tbody>
</table>
## Results: Quantitative Research

Figure: Main variables associated to developed product’s success and unsuccess

<table>
<thead>
<tr>
<th>ISOLATED VARIABLES</th>
<th>PROCESS CONTROL AUTOMATION/FACTOR LOADING – T-TEST</th>
<th>MEDICAL HOSPITAL/FACTOR LOADING – T-TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpretation of markets needs</td>
<td>0.478 – 0.003</td>
<td>0.567 – 0.000</td>
</tr>
<tr>
<td>Superior technical performance against competitors</td>
<td>0.509 – 0.001</td>
<td>0.483 – 0.006</td>
</tr>
<tr>
<td>Preparing documents – homologizing product</td>
<td>0.502 – 0.024</td>
<td>0.486 – 0.042</td>
</tr>
<tr>
<td>Managing skills necessary for the project</td>
<td>0.432 – 0.013</td>
<td>0.487 – 0.004</td>
</tr>
<tr>
<td>Analysing activities (technical and economical)</td>
<td>0.479 – 0.003</td>
<td>0.437 – 0.021</td>
</tr>
<tr>
<td>Generating and selecting ideas</td>
<td>0.384 – 0.023</td>
<td>0.513 – 0.001</td>
</tr>
</tbody>
</table>
Activities and Decisions Associated with Pre-Development

- Interpretation of the market needs;
- Superior technical performance against competitors;
- Analysis activities (technical and economical);
- Generating and selecting ideas.
Results: Quantitative Research

Importance of the pre-development phase

Great influence over the products development

Why?

The success of product development process depends on:

The proficiency of pre-development phase

Generating ideas;
Selecting ideas;
Formulating concepts;
Analysing viability

Were pointed out as being critical for success
Conclusions

The results of the study ratify many of the success factors indicated in the literature regarding PDP management

Like: SOUDER et al. (1997); ERNEST (2002); KAHN et al. (2006)

This study identified as critical factors on Product Development Management

Activities associated with pre-development phase

Some results are not compatible with the literature

Seeing that they are TBC, it was expected that the acquisition process and technological transference would be critical for such companies

This hypothesis was not verified with the results of the research
Conclusions

• This study has a limitation:
  the fact that it was carried out with a small sample of Brazilian companies and project developments of only two sectors of TBC

• Future studies can reproduce this method in other segments so that knowledge of PDP management in TBC can be applied and expanded.
Daniel Jugend

jugend@dep.ufscar.br