Best practices in new product development

Using effective methods to boost success

April 2013
From cost focus to product value management – Analysis of >400 development projects reveals new product development best practices

Management Summary

> In the last few years, the **challenges** for new product development have **increased** tremendously. Companies are facing intense competition from emerging markets, stricter standardization and regulations as well as changing customer behavior and requirements.

> If companies fail to get the development process right, their products will flop or be too expensive (up to 80% of all product-related costs are determined in the development phase).

> We have analyzed over **400 product development projects** at leading manufacturing companies and identified **best practices** in new product development. The key findings are:

  > Successful companies **focus on product value** rather than merely on product costs.

  > By doing so, they both **satisfy customers** and **increase product profitability**.

  > Successful companies improve product value by using **effective new product development methods** and also by creating the right **framework**.
A. Background and challenges
Successful new product development is a growing strategic challenge for many companies

Background and challenges for companies

- Increasing **global competition** in all major markets: **More new products from new competitors**

- **Shorter and shorter product lifecycles**: Companies are forced to churn out new innovations and new products in shorter times and greater frequency

- **High failure rates** in many industries: Up to 60% of new products/innovations flop

- **Early cost determination**: Up to 80% of **product-related costs determined** already in the product development phase
The key question is: How can companies improve product development and maximize product success?

Scope and key questions

**KEY QUESTIONS**

> How to **improve new product development** and maximize new product success?

> What are the **most effective methods** to support new product development?

> How can companies set up an **optimal framework** for realizing successful new products development?

**SCOPE: NEW PRODUCT DEVELOPMENT AND IMPACT ON PRODUCT SUCCESS**

![Diagram showing the scope of new product development and its impact on product success]

**APPROACH**

> Expert interviews

> Large scale empirical study of 410 new product development projects

> Ph.D. research together with the Brandenburg Technical University Cottbus
B. Key findings of the study
To answer these questions, we analyzed 410 product development projects from leading manufacturing companies.

Study of 410 product development projects

**INDUSTRIES**
- Other (building materials, aviations, chemicals): 12%
- Plant engineering: 13%
- Electronics: 14%
- Mechanical engineering: 35%
- Automotive: 26%

**COMPANY SIZE [FTE]**
- Large corporations: > 5,000
- Medium-sized companies: 250 to < 500
- Small companies: < 250
- 500 to < 1,000: 26%
- 1,000 to < 5,000: 22%
- > 5,000: 20%
- < 250: 15%
- 250 to < 500: 17%
- Other (building materials, aviations, chemicals): 12%
- Plant engineering: 13%
- Electronics: 14%
- Mechanical engineering: 35%
- Automotive: 26%
Key finding: Successful companies increase product profitability by using effective new product development methods

1. Successful companies apply more methods in new product development and use them more intensively

2. Successful companies select the right methods at the right time

3. Successful companies combine different methods from R&D, Market Research, Purchasing, Quality, Logistics and Project Management
Companies that apply more methods in product development and use them more intensely have significantly higher project success.

Impact of method application on product success

**SUCCESSFUL COMPANIES APPLY MORE METHODS ...**

Companies that use an above average number of methods have a 11% higher overall product success rate.

**... AND THEY USE THEM MORE INTENSIVELY**

Companies that apply methods particularly intensively have the highest overall product success rate.

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1) Product success measured as a combination of different aspects (market share, product revenues, product cost, return on investment, etc.)
26 methods were analyzed in detail, thereof 15 purchasing, project management and quality and logistics methods ...

<table>
<thead>
<tr>
<th>PURCHASING METHODS</th>
<th>PROJECT MANAGEMENT METHODS</th>
<th>CROSS-FUNCTIONAL METHODS</th>
<th>QUALITY/LOGISTICS METHODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Specified tenders</td>
<td>1 Milestone planning</td>
<td>1 Benchmarking</td>
<td>1 Failure mode and effect analysis (FMEA)</td>
</tr>
<tr>
<td></td>
<td>(stage gate, critical path</td>
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<tr>
<td></td>
<td>analysis)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Target costing</td>
<td>2 Risk monitoring and</td>
<td>2 SWOT analysis</td>
<td>2 Design for six sigma</td>
</tr>
<tr>
<td></td>
<td>controlling</td>
<td></td>
<td>(DFSS)</td>
</tr>
<tr>
<td>3 Low-cost/best-cost country sourcing</td>
<td>3 Product value/profitability analysis</td>
<td>3 Creativity techniques (brain-writing…)</td>
<td>3 Supplier management and development</td>
</tr>
<tr>
<td>4 Total cost of ownership (TCO)</td>
<td>4 Project controlling (time and budget)</td>
<td>4 Scenario planning and analysis</td>
<td></td>
</tr>
</tbody>
</table>

Methods sorted by impact on success.

Correlation coefficients (**results are significant at error probability of 1%/5%)
## RESEARCH AND DEVELOPMENT METHODS

<table>
<thead>
<tr>
<th>Method</th>
<th>Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Design for manufacturing/assembly (DFM/A)</td>
<td>0.33**</td>
</tr>
<tr>
<td>2. Quality function deployment (QFD)</td>
<td>0.21**</td>
</tr>
<tr>
<td>3. Simultaneous/concurrent engineering</td>
<td>0.15**</td>
</tr>
<tr>
<td>4. Collaborative supplier integration</td>
<td>0.15**</td>
</tr>
<tr>
<td>5. Standardization/modular design</td>
<td>0.14**</td>
</tr>
<tr>
<td>6. (Rapid) Prototyping</td>
<td>0.14**</td>
</tr>
<tr>
<td>7. Computer-aided engineering/design</td>
<td>0.12*</td>
</tr>
</tbody>
</table>

## CUSTOMER INTEGRATION/MARKET RESEARCH METHODS

<table>
<thead>
<tr>
<th>Method</th>
<th>Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Product (design) test</td>
<td>0.23**</td>
</tr>
<tr>
<td>2. Consumer interviews and observations</td>
<td>0.19**</td>
</tr>
<tr>
<td>3. Price test/price sensitivity analysis</td>
<td>0.19**</td>
</tr>
<tr>
<td>4. Conjoint analysis</td>
<td>0.13*</td>
</tr>
</tbody>
</table>

1-7 Methods sorted by impact on success.

Correlation coefficients (** results are significant at error probability of 1%/5%)
Successful companies select the right methods at the right time

Method application by project stage – Particularly successful companies

Legend
- Orange: Purchasing
- Blue dotted: Customer integration/market research
- Blue solid: Research and development
- Black dotted: Cross functional methods
- Black solid: Quality and logistics

Comments
- Successful companies use market research methods already in early stages to understand customer requirements.
- Successful companies consider purchasing, quality and logistics also from an early stage.
- Highest use of technical methods in concept and prototype phase.
Most important: Using the right combination of different methods is key to product success

Impact of combined (instead of isolated) use of methods

**IMPACT ON PRODUCT SUCCESS**

<table>
<thead>
<tr>
<th>Method Use</th>
<th>Product Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolated method use</td>
<td></td>
</tr>
<tr>
<td>Combined use of methods</td>
<td>+15%</td>
</tr>
</tbody>
</table>

**COMBINATION OF METHODS**

Companies that combine methods from all functions are 15% more successful with their new products

**THE COMBINATION OF DIFFERENT METHODS IS THE KEY TO PRODUCT SUCCESS**

1) Product success measured as combination different aspects (market share, product revenues, product cost, return on investment, etc.)
2) Above average number of methods from all clusters used
Successful companies set up the right framework: They foster top-management support and structure their product development process.

Framework set by successful companies

**Strong top-management support**

- Top-management is **actively involved** in the project
- Top-management closely **monitors the progress** of the project
- Top-management provides required resources

**Robust product development process**

- Defined process stages with go/no-go decision gates
- Dedicated gatekeepers review projects at gates
- Activities per stage and corporate functions involved are clearly defined
- Methods for each stage are defined and documented

**1. MORE METHODS and INTENSIVE USE**

**2. RIGHT METHODS at the RIGHT TIME**

**3. RIGHT COMBINATION of methods**
C. From cost focus to Product Value Management
Increased product value can only be achieved through a perspective change – From cost focus to Product Value Management.

Evolution of company focus

TODAY

FUNCTIONAL COST REDUCTION

TOMORROW

PRODUCT VALUE MANAGEMENT (PVM)

Giving customers what they want
> For a price they are willing to pay
> At minimum costs

Source: Roland Berger
Product Value Management pursues two basic optimization routes to satisfy customers and maximize the product margin.

Value formula

**CUSTOMER PERSPECTIVE**

1. **BETTER**
   - Price increase *greater than* (> cost increase

2. **SAME**
   - New cost *less than* (< old cost

**COMPANY PERSPECTIVE**

- Customer satisfaction

**VALUE CONTRIBUTION**

- Value/profitability maximization on product level

**RESULT**

Products with the right features at the right cost

Source: Roland Berger
Examples from different industries demonstrate that both higher customer satisfaction and increased product profitability can be achieved.

Benefits – Examples

- **Cosmetics packaging**
  - ~15% cost reduction
  - **Packaging size reduction** – More sustainability and reduced cost
  - **Improvements** vs. conventional folding box:
    - Reduced size by 20%
    - Optimized construction
    - Reduced material cost by 15%
    - Reduced logistics costs

- **Car panorama sunroof**
  - ~40% margin increase
  - **New product idea** – Panorama sunroof with improved funct. value
  - **Improvements** vs. standard sunroof:
    - Increased glass surface
    - Increased margin by ~40%
    - Differentiating element
    - Standardized across car lines, variants modularized

- **Chewing gum packaging**
  - ~6% price increase per piece
  - **New packaging** with improved functional value
  - **Improvements** vs. conventional packaging:
    - Packaging improved: re-closable
    - Product handling improved: dragees
    - Content increased: 46 pieces
    - Sales growth of +14%
Product Value Management is enabled by methods/tools

Approach

DEVELOPMENT PROCESS

A What are consumer preferences (e.g. performance, features)?
- Consumer interview and observations
- ...

B What drives cost and how can we influence them early on?
- Target costing
- Quality function deployment (QFD)
- ...

C What alternatives do we have (e.g. features, solutions)?
- Collaborative supplier integration
- ...

D What alternative is valued by the consumer and increases profitability?
- Conjoint analysis
- Price test
- ...

Method/tool examples

Source: Roland Berger
Further reading think:act CONTENT Product Value Management

**KEY ELEMENTS OF PVM APPROACH**

- Focus on **target customers**
- Understand **customer value**
- Choose the **right methods** and **combine** them intelligently
- Take a **cross-functional approach**
- Think in terms of **alternatives**
- **Execute** in a **consistent** manner
- Anchor the **principle** of PVM in your organization

www.rolandberger.com/Product_Value_Management
It's character that creates impact