



creativity

innovation

# Topic Outline

- Innovation Failure Reasons and Safeguards
- Constraints of Innovation
- Minimizing Risk of Failure-risk Management
- Measuring Success



# Lesson Outcomes

1. Identify reasons of innovation failure and their safeguards
2. Discuss the different constraints and risks of innovation
3. Describe metrics for measuring innovation success



# Innovation Failure Reasons and Safeguards

Failure reason	Elaboration	Suggested safeguard
Major shifts in technology	'Blind-sided' by radical change in technology; stayed with old technology too long	Monitor new technologies; look for new benefits they can produce; continuing education for R&D; have a contingency plan for shifts
Changes in customers' tastes	Substantial shift in customer preference before product achieves market penetration	Frequent monitoring and updating of customer preferences in the design, testing and launch phases
Changes in environment constraints	Drastic change in some key factor such as economic conditions or material costs	Analysis of environmental constraints in opportunity identification; monitoring in testing and launch; adaptability in design
Poor repeat purchase or no diffusion of sales	Customers buy the product in the beginning, but sales never reach potential	Trial and repeat, and diffusion measured in design phase and monitored in testing and launch; product designed to deliver real benefits; advertising matched to product's benefits delivery
Poor after sales service	Product complex or not reliable and service not delivered	Service considered as an explicit designed in benefit; monitored in testing and launch
Insufficient return on investment	Poor profit relative to investment	Careful selection of markets, forecasting of demand, design of product for low-cost production; value maps facilitate profit maximisation

Failure reason	Elaboration	Suggested safeguard
Lack of coordination in functions	R&D develops a product that does not meet customer needs; marketing identifies benefits that cannot be delivered; design changes make production difficult	New product process is used to coordinate marketing, R&D, engineering and production; the input from the customer drives the design
Organisational problems	Conflicts between marketing, R&D and production; inadequate communication of key aspects of design and marketing	Careful attention to communication and explicit programmes to coordinate with quality design programmes; management involvement and review at various stages of the process; careful go/no go decisions with objective criteria
Market too small	Insufficient demand for this type of product	Market is defined and rough potential estimated in opportunity identification; demand forecasts in design and in testing
Poor match for the company	Company capabilities do not match the requirements for producing and marketing the product	In opportunity identification the company's capabilities are matched to the strategic plan; this is then tested in pre-launch, pre-test and test markets

Not new/not different

A poor idea that really offers nothing new to the customer; the technology may be new, but the benefit to the customer is not evident

Creative and systematic idea generation in opportunity identification; product designed with a focus on the customer; product and position tested before launch

No real benefits

Product does not offer better performance vis-à-vis customer needs; under-investment in core technologies

In design, a strategic benefit position is identified and the product engineered to deliver these benefits; R&D designs real product performance improvements; product test with customer assure adequate benefit delivery

Poor positioning vs competition

Perceived benefits from the product are dominated by a mix of competitive products; low value

The use of perceptual mapping, value mapping, and preference analysis identifies gaps in the market relative to competitive products

Inadequate support from the channel of distribution

Products fail to generate expected channel support; demonstrations not provided if needed; product not available to customers; after purchase service not available

The channel is considered in opportunity identification; service delivery is part of the product design; the channel reaction is monitored in testing and in launch

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Failure reason	Elaboration	Suggested safeguard
Forecasting error	Excess production due to overestimation of sales; opportunities are lost because of underestimation of sales and low production and marketing	Systematic methods in design, pre-test. And testing phases of the process improve earlier forecasts as the product and marketing strategy near completion
Poor timing	Enter too late in market; cycle time too long; miss window of technology or market opportunity	Design process to get to market fast; monitor changes; trade-off risks of go or delay
Competitive response	Competitors respond quickly before the product can achieve a success in the market; price and promotion; competitors copy design and improve it	Strategic positioning vis-à-vis competition; consideration of competitive response in design, pricing, and marketing plans; 'what-if' scenarios; monitoring of test and launch; move aggressively to establish first in market advantages

Source: Reproduced from Urban, G.L. & Hauser, J.R. (1993). *Design and Marketing of New Products*. Prentice-Hall

# Constraints of Innovation

## 1. Time Frame

Constraint	Implication
Externally or internally imposed time frame (e.g. competitor has announced timing for the introduction of a similar product; being part of a system; product introduction required for company's survival)	Restricts the ability to experiment and explore different options Increases the likelihood that an organisation will rely on existing and proven designs and technologies

## 2. Technology

Constraint	Implication
Dominant design	Restrict the choice of design and technology High risk is attached in deviating from the dominant design
Industry standards	Restrict the choice of design and technology
Company internal standards	Restrict the choice of design and technology Can prevent experimentation with different approaches and technologies
Government regulations (environment, health and safety)	Restrict the choice of design and technology Changes in regulation may require re-design of existing components
Being part of a system	Restrict the choice of design and technology



# Constraints of Innovation

## 3. Skills

Constraint	Implication
Skills available within the company	Company finances and politics will influence the freedom to bring in external expertise; company politics can also decide who is involved in the project (prestige projects tend to get the best people)
Skills available to the project	Due to other projects the most appropriate skills may not be available to the project
Existing knowledge base	May prevent a critical assessment of a new task

## 4. Processes

Constraint	Implication
Existing plant and machinery	Unless financial resources are available to alter existing plant and machinery, they can significantly constrain the choice of materials and technology
Existing organisational processes and procedures	The implications of a change need to be understood, i.e. how does the new process require the 'ways we do things around here' to change

# Constraints of Innovation

## 5. Participants

Constraint	Implication
Distance between partners	The distance between partners can act as constraint on the communication flow
Split the work load	If more than one company is involved, each partner will expect a 'fair' share of the work whereby the 'fair' share might not be equivalent to the distribution of expertise but is often related to the financial backing by the companies involved
Partners (externally) imposed	Particularly in international projects the choice of partner might be externally influenced, e.g. by government; in national multi-company projects headquarters or other institutions of power might influence the choice
Politics	As the number of participants increases politics between differing interests are likely to impact on speed and efficiency

## 6. Financial Resources

Constraint	Implication
Budget	If financial resources are not available even the most congenial idea cannot be realised There is a technical solution to most problems but the result may not justify the investment

# Constraints of Innovation

## 7. Culture

Constraint	Implication
Language	The need to share a language might restrict the choice of people working on the project If different cultures (national as well as company or departmental) are involved more time and effort has to be spent on ensuring shared understanding (objectives, procedures, etc.)
Different procedures and systems	Can slow a project down owing to the need to 'translate' between different systems; alternatively investment might be required to ensure compatibility
Habits and assumptions	Can influence, for example, the realistic assessment of a new task, how people interact and how decisions are made

## 8. Customers & Markets

Constraint	Implication
A company's reputation	How a company and its product are perceived by its markets and customers can be a constraint on the kind of product and the pricing strategy
Regulations	Regulations in different markets can also impact on the choices an organisation can make, this aspect has the most severe impact on technology

# Minimizing Risk of Failure

- Risk – uncertainty of outcome, whether positive opportunity or negative threat of actions or events.
- Risk management – all the process involved in identifying, assessing, and judging risks, assigning ownership, taking actions to mitigate or anticipate them, and monitoring and reviewing progress.

- **Main Types Of Risks**

- 1. Technology Risk

- A set of technical problems associated with new or emerging technology; it includes:
      - i. Availability of competencies and complementary technologies
        - ✓ New technical skills, tools, processes or some complementary technologies are not available and must be developed in the course of the project.
        - ✓ Maybe available outside and must be acquired through contract or partnership etc.

# Minimizing Risk of Failure

## ii. Specification availability

- ✓ The goal of the project is incompatible with the product specifications such as user-friendliness, quality, reliability, government regulations etc., once they have been chosen.

## 2. Marketing Risk

### i. Availability of value chain elements

- ✓ Activity of product engineering, manufacturing, marketing, distribution and sales organisation which may not be ready for the innovation.
- ✓ The elements may not be incorporated in time to the marketing process of the innovation.

### ii. Product vector of differentiation

- ✓ Unknown innovative activity by the rival firms.

### iii. Market acceptance

- ✓ Depends on how much prior experience the firm has with the market et

### iv. Strength of intellectual property protection

- ✓ Risk of imitation of the innovation by the rival firms which decrease the lead time and the first-mover advantages.

# Measuring Success

Based on two categories of metrics:

1. Performance Metrics – looking at long-term performance and impact of the NPD program.

Metric	Components	Potential implications
<b>Return on innovation investment</b>	Cumulative net profits generated from new products launched Research costs + development costs + incremental production costs + initial commercialisation pre-launch costs	Single, standard measure for comparing performance between divisions over time and within industry
<b>Cumulative profits</b>	Cumulative (3–5 years) profits from new products	Impact on income statement
<b>Cumulative revenues</b>	Cumulative (3–5 years) revenues from new products	Impact on income statement
<b>Growth impact</b>	Revenues from new products over 3–5 years 3 year revenue growth	Contribution to firm growth
<b>Success rate</b>	Number of new products exceeding 3-year original forecast Total number of new products commercialised in last 3 years	Indicates quality of planning
<b>New product survival rate</b>	Number of new products remaining in the market (time period X) Total number of new products launched (time period X)	Provides insight about the demand of new product introductions relative to total new product efforts

# Measuring Success

2. Program Metrics – to understand operational concerns reflected by the innovation performance metrics.

Metric	Category	Components	Potential implications
Speed-to-market	Speed	<ul style="list-style-type: none"> <li>Σ (time from idea generation to market launch for new products)</li> <li>Total number of new products</li> </ul>	R&D process efficient?
R&D innovation emphasis	Amount	<ul style="list-style-type: none"> <li>Cumulative (3–5 year) R&amp;D expenditure allocated solely in new products</li> <li>Cumulative (3–5 year) R&amp;D expenditure</li> </ul>	<ul style="list-style-type: none"> <li>Focus on innovation?</li> <li>Innovation strategy executed?</li> </ul>
New product portfolio mix	Type	<ul style="list-style-type: none"> <li>Number of new products of type X</li> <li>Total number of new products</li> <li>Revenues from products of type X</li> <li>Total revenues from new products</li> <li>Expenditures for products of type X</li> <li>Total expenditure on new products</li> </ul>	<ul style="list-style-type: none"> <li>Balanced?</li> <li>Aligned to strategy?</li> </ul>
Process pipeline flow	Amount	<ul style="list-style-type: none"> <li>Number of new product concepts in each stage of development</li> </ul>	<ul style="list-style-type: none"> <li>How full is pipeline? Future revenues and expenses?</li> <li>Bottlenecks?</li> </ul>
Innovation revenues/employee	Success	<ul style="list-style-type: none"> <li>Total annual revenues from commercialised new products</li> <li>Total number of full-time equivalent employees devoted solely to innovation initiatives</li> </ul>	<ul style="list-style-type: none"> <li>Provides insight about the effectiveness of additional resource allocations</li> </ul>

