REGRESSING PATENT DATA & ANALYSIS

COURSE: INNOVATION DEVELOPMENT IN COMMERCIAL BANKS

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SOURCES OF INNOVATION IMPULSES

Internal environment

- Own R&D
- Technical divisions – design, technology
- Production divisions (production, provision of services)
- Marketing and sales
- Logistics (purchase and supplies)
- Guarantee and post-guarantee service
- Owners

SOURCES OF INNOVATION IMPULSES

External environment

- Customers
- Suppliers
- Competitors
- Consultants, R&D institutions
- Schools, universities
- Professional publications, Internet
- Exhibitions, fairs, specialized seminars and conferences
- Advertising agencies
- Investors
- Media
- Authorized testing laboratories, certification agencies
- State institutions, public sector
- Legislation
- Globalization

MARKET PULL - R&D PUSH

- **Market pull**
  - looking for the best way of satisfying a newly emerging customer demand
  - improvement of the existing products, extension of the existing offer or decrease of price
  - impulses for continuous, incremental innovations or for process innovations
- **Research and development push**
  - looking for commercial use of new impulses resulting from the R&D results
  - generating of new markets for conceptually different products

7 SOURCES OF INNOVATION IMPULSES
(Drucker)

INTERNAL

1. *unexpected event*
2. *contradiction*
3. *change of work process*
4. *change in the structure of industry or market*

EXTERNAL

5. *Demographic changes*
6. *Changes in the world view*
7. *New knowledge*

1. Unexpected event

- *Unexpected success*
- 1. What will the use of the offered opportunity mean to us?
- 2. Where will its introduction take us?
- 3. What do we need to do for its implementation?
- 4. How can we achieve that?
- *Unexpected failure*
- *Unexpected external event*

2. Contradiction

- *Non-compliance with economic reality*
- *Contradiction between reality and anticipations about it*
- *Contradiction between the anticipated and real behavior of customers and their values*

3. Change of process

- realize the necessity of change, identify the weak point of the chain
- be convinced that if something does not work the way it should, then it is necessary to attempt a change
- the solution must be convenient for those who will implement it. It must place moderate and feasible requirements

4. Change in the structure of industry and market

- Rapid growth of the industry
- Identification of new market segments
- Convergence of technologies (e.g. use of computers in telecommunications)
- Rapid change of the industry and resulting need of a structural change

5. Demography

- easiest to describe and to predict
- influence what will be bought, who and in which amounts will purchase

6. Change of attitudes

- change in the approach to health: health-care, food, spending the leisure time
- “upper-middle class”: a chance to offer non-standard services at non-standard prices
- increasing migration, feminism, regionalism etc
- Timing is essential - to be the first

7. New knowledge

- Based on convergence or synergy of various kinds of knowledge, their success requires, high rate of risk
  - Thorough analysis of all factors. identify the “missing elements” of the chain and possibilities of their supplementing or substitution;
  - Focus on winning the strategic position at the market. the second chance usually does not come;
  - Entrepreneurial management style. Quality is not what is technically perfect but what adds the product its value for the end user

IMPULSES FROM THE MARKET ENVIRONMENT

- Customers

  product presentation

  – **realistic**

  – **simple, demonstrative and precise**

  – **moderate**

  – **representative sample** of customers
- Suppliers
- Competitors

INNOVATION IMPULSES OF THE R&D

- **identification research:** to monitor the scientific, technical and economic information and identify innovation impulses applicable in the company
- **basic research**
- **applied research:** acquire knowledge and means applicable for the meeting of specific, beforehand-defined goals
- **development:** systemic use of knowledge and means acquired in the applied research for the creation of a new or improvement of the existing product or for the creation or modification of processes

INTERNAL IMPULSES

- usually combined with external sources
- supported by
  - creative techniques
  - innovation tools

- REGISTER OF IMPULSES

GENERAL INNOVATION TOOLS

- Benchmarking
- Brainstorming
- Business Process Reengineering
- Change Management
- Technology Audit
- Technology Forecast
- Value Analyses

PRODUCT INNOVATION TOOLS

- Design for X
- Quality Function Deployment

MANAGERIAL INNOVATION TOOLS

- Failure Mode and Effect Analysis
- Peer Evaluation
- Team Building
- ISO 9000
- Total Productive Maintenance

PROCESS INNOVATION TOOLS

- Design for Manufacture and Assembly
- Lean Thinking
- Continuous Improvement
- Concurrent Engineering
- Just In Time

General Innovation Tools

BENCHMARKING

Benchmarking is the process of improving performance by continuously identifying, understanding, and adapting outstanding practices and processes found inside and outside an organization (company, public organization, University, College, etc.).

Benchmarking of business is usually done with top performing companies in other industry sectors. This is feasible because many business processes are essentially the same from sector to sector.

BRAINSTORMING

Brainstorming is an idea-generating method widely used by teams for identifying problems, alternative solutions to problems, or opportunities for improvement. This method originated in 1941 by Alex F. Osborne, when his search for creative ideas resulted in an unstructured group process of interactive "brain-storming" that generated more and better ideas than individuals could produce working independently.

The term Brainstorming has become a commonly used word in the English language as a generic term for creative thinking. It is actually done naturally and doesn't necessarily require planning. The more alternatives you generate, the better chance you have of uncovering the best solution.

REENGINEERING

"Reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service, and speed." ..... (Hammer & Champy, 1993).

CHANGE MANAGEMENT

Change management is the process of aligning an organization's people and culture with systems changes, business strategy, and organizational structure. An active change management plan builds understanding and commitment to changes associated with an implementation of any type (e.g., reengineering, information technology, or strategic initiatives); aligns key organizational elements (structure, roles, skills, etc.) to support the desired change; and enables continuous performance improvement to sustain the change.

Specific techniques useful at the different change management process steps.

CHANGE MANAGEMENT STEP	SPECIFIC TECHNIQUE
Making time	time management techniques
Preparing a vision statement	SWOT analysis
Identify what factors will hinder change	force field analysis
Selling the change	internal marketing techniques
Developing a plan	strategic planning techniques
Learning	
Monitoring effectiveness	

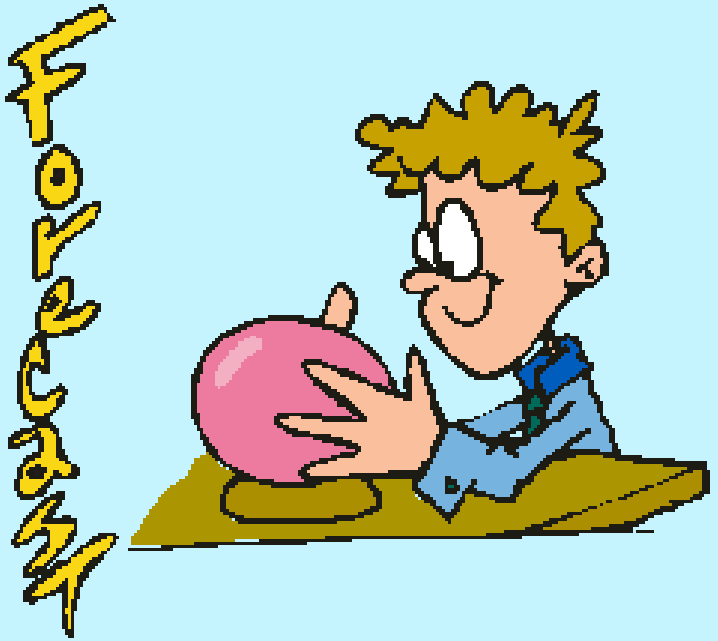
INNOVATION MANAGEMENT TOOLS
http://www.wiley.co.uk/innovate/website/pages/atoz/atoz.htm

TECHNOLOGY AUDIT

The Technology Audit is a method for identifying through a short interview-visit to a company, the major company requirements, needs, weaknesses and strengths on both human resources and infrastructure. The Technology Audit is a technique that enables the auditor to determine and identify in a very short meeting session, the management's view of how the company performs as well as strong indications of what the company really needs. The Technology Audit technique examines concurrently the External and Internal environment of the company and identifies the human resources relation to company's performance.

TECHNOLOGY FORECAST

Technology forecast includes "all efforts to project technological capabilities and to predict the invention and spread of technological innovations". A technological forecast actually includes four elements: the time of the forecast or the future date when the forecast is to be realized, the technology being forecasted, the characteristics of the technology or the functional capabilities of the technology, and a statement about probability.



VALUE ANALYSIS

Value Analysis can be defined as a process of systematic review that is applied to existing product designs in order to compare the function of the product required by a customer to meet their requirements at the lowest cost consistent with the specified performance and reliability needed.

Product Innovation Tools

DESIGN FOR X

Design for X (DFX) is one of the most effective approaches to implementing Concurrent Engineering. It focuses on a limited number, say 7 ± 2, of vital elements at a time (Miller, 1956). This allows available resources to be put into best use.

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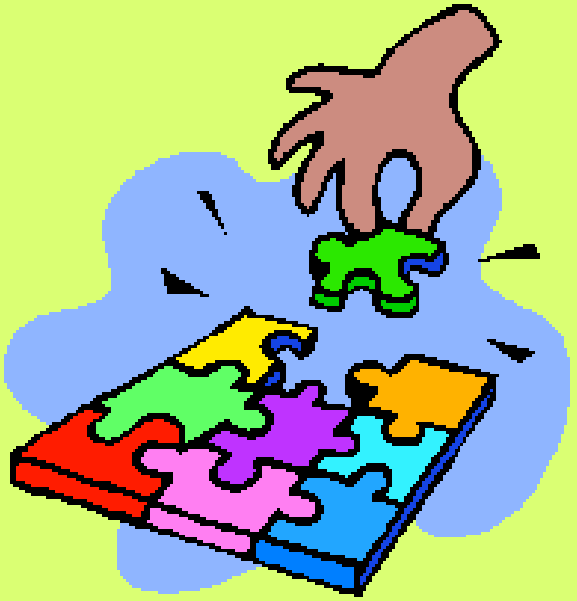
„X“ - examples

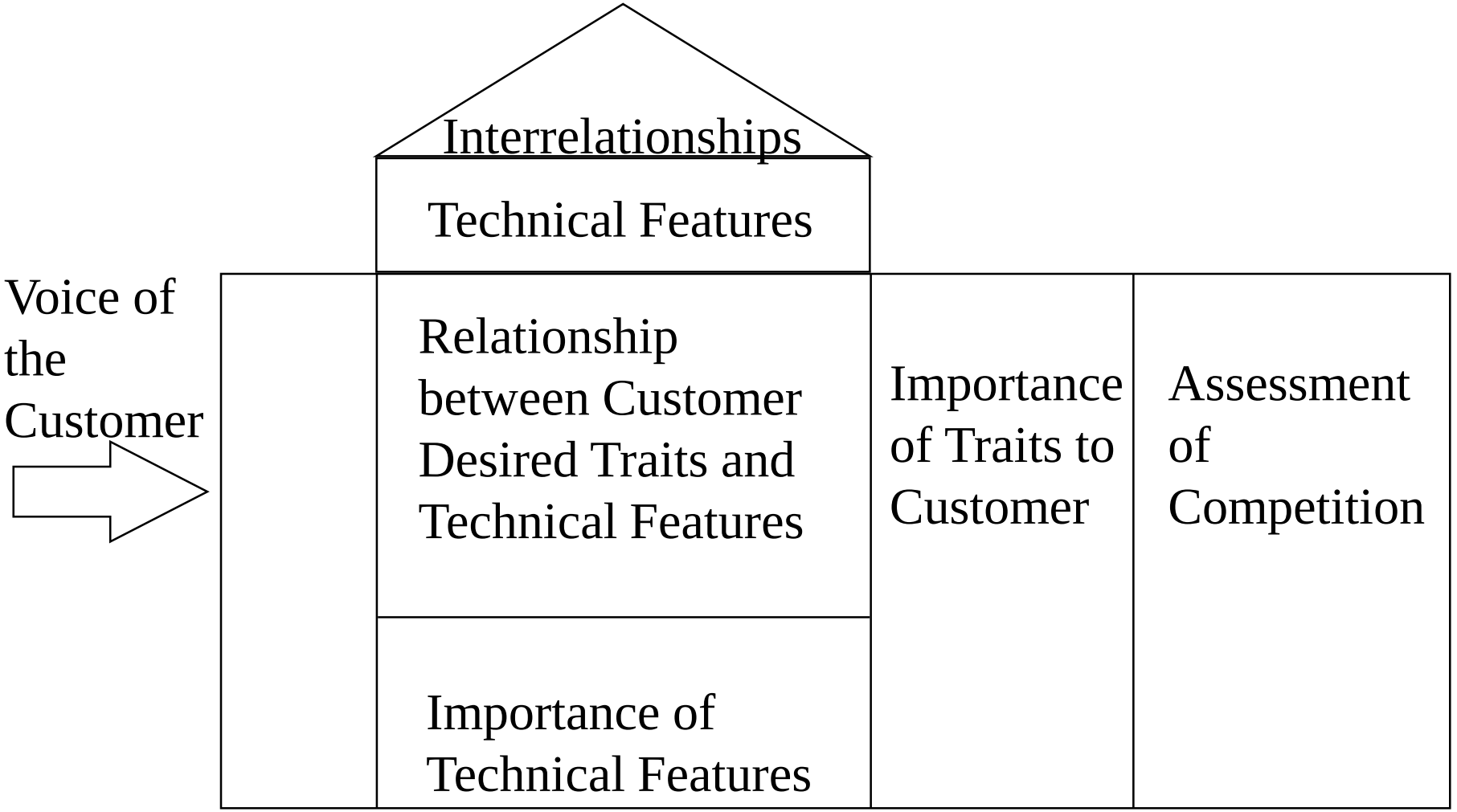
Design for Manufacturing and Assembly (DFMA)	**Design for Environment (DFE)**
Design for Dimensional Control (DDC)	**Design for Inspectability**
Design for Storability	**Design for Reliability (DFR)**
Design for Electromagnetic Compatibility	**Design for Disassembly (DFD)**

QUALITY FUNCTION DEPLOYMENT

We can define Quality Function Deployment as converting the consumers' demands into "quality characteristics" and developing a design quality for the finished product by systematically deploying the relationships between the demands and the characteristics, starting with the quality of each functional component and extending the deployment to the quality of each part and process. The overall quality of the product will be formed through this network of relationships.



House of Quality

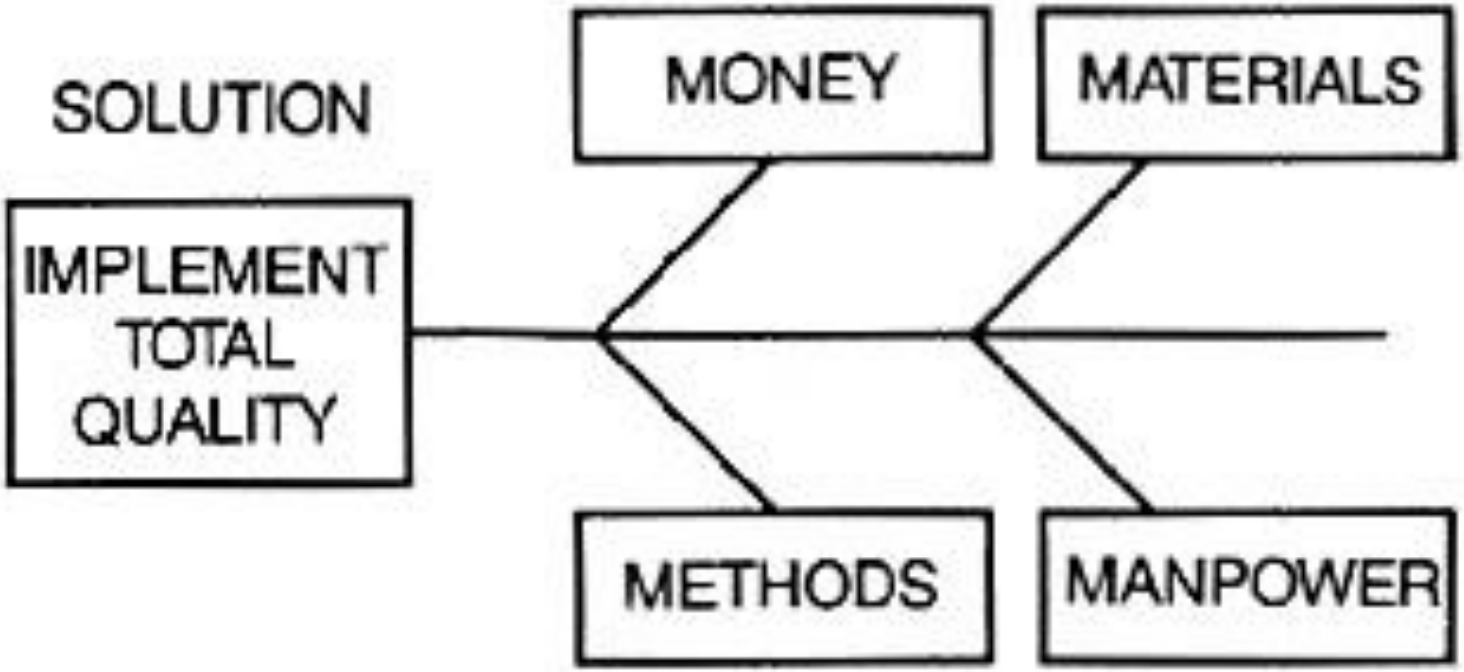


House of Quality: Steps for Generation

1. Identify Customer Attributes
2. Identify Supporting Technical Characteristics
3. Correlate Customer Attributes with Supporting Technical Features
4. Assign Priorities to Customer Requirements and Technical Features
5. Evaluate Competitors' Stances and Products
6. Identify Technical Characteristics to Deploy in the Final Product Design

FAILURE MODE AND EFFECT ANALYSIS (FMEA)

Failure Mode and Effect Analysis (FMEA) is a powerful, quality assurance discipline used to identify and minimise the effects of potential problems in product or process designs. The technique was formalised by NASA in mid-1960's, and first used by Ford North America in 1972, and is now used by GMH (Aust) and Ford (Aust).



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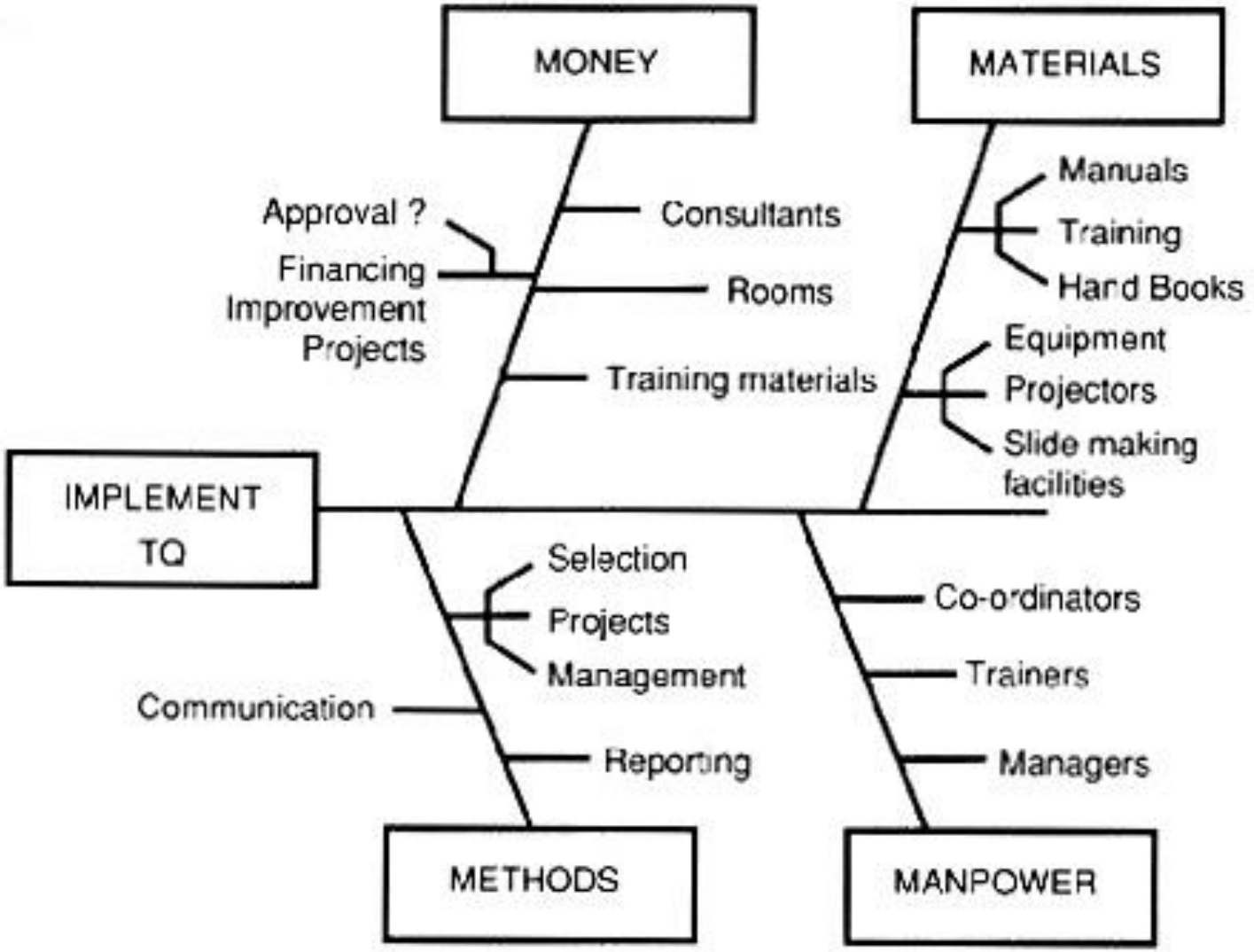

INNOVATION MANAGEMENT TOOLS

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