Performance Management and Logic Modeling

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Learning Objectives

• To understand how impact assessment fits in performance management information
• To know why it is important to choose success indicators carefully.
• To be introduced to the logic model tool for thinking through a theory of programme strategy
• and then choose a set of indicators that covers key aspects.
Impact Assessment is One Part of Performance Based Management (PBM)

Performance information is used in all areas of PBM, will improve decisions and can be used to foster accountability.
Managing for Results (PBM) is required around the world

In legislation like the U.S. Government Performance and Results Act (GPRA)

- Strategic Plan (Agency Level)
- Annual Performance Plans (Budget Level)
- Performance Report (Budget Level)
Fundamental!
Measure Your Strategy

• Performance planning is in relation to the overall organization’s Mission, Vision and Goals.
• Strategy describes pathways to reach goals.
• A Balanced Scorecard approach looks at four perspectives/elements in a logic model:
  • Learning & Growth (Resources)
  • Operations (Activities, Outputs)
  • Customer (Transfer, Short, Intermediate Outcomes)
  • Financial/Mission (Long term/Ultimate Outcomes)
Bad Practice and Why You Don’t Go There

Bad practice:
• Measure something because you can, or already are.
• Not measuring something because it “isn’t measureable” or you don’t have the data, or the measure isn’t perfect.
• Measure too many things.

What happens with bad practice:
• Goal displacement when indicators are too simple.
• Rigid use of indicators means can’t respond to changes.
• Use of too narrow a set of indicators means inferior projects/contractors may be chosen.
Advice on choosing key indicators

Various levels of the organization each need a small set. Each indicator in the set will

- **Link to desired outcomes.**
- **Communicate well.**
- **Benefits greater than costs to collect (feasibility).**
- **Drives performance the right way.**

A **Balanced Set/Scorecard** tells a brief, convincing performance story and drives performance the right way by measuring the strategies and by covering all aspects of the programme logic and of stakeholder information needs.
How to Develop a Strategic or Programme Theory (Logic) Map

• Describe the underlying assumptions about how a programme causes intended outcomes.
• Involve a full range of programme managers, stakeholders.
• Concentrate on the sequence of outcomes.
• Look at outcomes from different perspectives such as Research Capacity, Progress Toward Social Outcomes.
• Think through why things could go wrong to illuminate assumptions, risks.
• Make it a dynamic, iterative process.
A logic map/model is a process, which results in a diagram and text that describe key logical relationships.

Research Program

For/With

Results Chain

Resources
Activities
Outputs
Customers/Partners (Includes Transfer, Use)
Short-Term Outcomes
Customer Decisions & Actions
Intermediate Outcomes
Strategic Objectives
Long-Term Outcomes
Strategic Goals

Outcome Worksheet

Strategic Goals | Intermediate Outcomes | Short term outcomes | Customers/Partners reached | Outputs | Activities | Resources
---|---|---|---|---|---|---

Modified from RAND- NIOSH
Define the problem the programme addresses and the context. Start with the big picture.

The Context

Drivers of Success

Constraints on Success

(The programme)

Factors leading to the Problem
1
2
3* your programme area

The Problem the programme Addresses

e.g. regulatory policies

e.g. market failures and barriers

e.g. pollution from energy use
Example: A map of research topics needed to create the scientific foundation for environmental decisions

**SOURCES / EMISSIONS**
- Chemical
- Physical
- Microbial

**TRANSPORT / TRANSFORMATION**
- Kinetics
- Thermodynamics
- Chemistry
- Dispersion
- Meteorology

**AMBIENT ENVIRONMENTAL CONDITIONS**
- Air
- Water

**HUMAN OR ECOSYSTEM EXPOSURE**
- Individual
- Community
- Population

**DOSE**
- Absorbed
- Internal
- Target
- Biological Effective

**ALTERED STRUCTURE / FUNCTION**
- Molecular
- Biochemical
- Cellular
- Organ
- Organism

**HEALTH & DISEASE RISK**
- Edema
- Arrhythmia
- Asthma

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**Change in emissions or discharge**
**Change in ambient environmental concentrations**
**Change in magnitude, duration, frequency of exposure**
**Change in uptake and / or assimilation**
**Early change in function, structure, or effect**
**Change in human or ecosystem health**

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**Critical links** related to sources, exposure, health effects, risk assessment, and regulatory decision-making

The pathways from inputs to outcomes – magic in the middle

“I think you should be more explicit here in step two.”
Describing Pathways – an example
The Canadian Academy of Health Sciences Logical Framework for Understanding the Impacts of Health Research

Modified from CAHS Report on ROI for Health research available at www.cahs-acss.ca/making-an-impact-a-preferred-framework-and-ind...
TOOL: Identify the sequence of programme outcomes.

A commonly used sequence of Direct and Intermediate Outcomes:

- Awareness
- Persuasion
- Decision
- Implementation
- Confirmation
- Feedback

- Adoption
- Rejection
- Continued adoption
- Later adoption
- Discontinuance
- Continued rejection
- Others Replicate

E. Rogers, 1995, modified
TOOL: Do Forward Mapping (Why? or If-Then) and Backwards Mapping (How?)

- If Evidence is found, then Guidelines are changed
- If Doctors use new guidelines, then Patients get additional tests
**TOOL: define risk and success factors for each outcome**

These can be described in a programme logic matrix.

<table>
<thead>
<tr>
<th>Intended Outcome</th>
<th>Success Criteria</th>
<th>Program Factors Affecting Success</th>
<th>Non program Factors Affecting Success</th>
<th>Activities &amp; Resources of program</th>
<th>Performance Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in attitudes of target businesses toward being willing to change practices</td>
<td>Agreement to meet to discuss action; Action plans; Specific examples of increased willingness</td>
<td>Availability of confidential advisory assistance, etc.</td>
<td>Business beliefs, past experiences, etc.</td>
<td>Promotes advisors and makes commitments about confidentiality, etc.</td>
<td>% business that request assistance, compared with targets; % that do actions plans; etc.</td>
</tr>
</tbody>
</table>
Example: The Logic Model of an Organization Funding Basic Research

**ACTIVITIES**
- Identify/ Direct/Redirect resources to important questions & needs
- Gather/ Build/ Maintain/ Provide resources in select areas
- Perform or Have Performed high quality research
- Disseminate/ Seek Review/ Feedback research plans, findings

**OUTPUTS & OUTCOMES**
- Students work with DOE or elsewhere
- Construct, operate, facilities
- Facility use - DOE & others
- Propose; Experiment, theorize; Collect & analyze data
- Prove, disprove; Theories, techniques developed & solutions generated
- Inform and be informed by collaborators, peers, potential users

Robust S&T workforce
Robust S&T Facilities & Equipment
New structure, new ideas, tools, fields, Opportunities for use by others
Strong communities of practice
Capacity/Agility
Transitions – findings used

Significant Contributions to DOE Mission, National Needs, Society

(U.S. DOE DRAFT – Unofficial, 2002)
Using The Logic Model to Define Key Evaluation Questions and Performance Measures
A Generic Research Programme – Three Areas of Outcomes

Research Program

- Resources
- Activities & Outputs

For/With

- Target Audience (Includes Transfer, Use)

Results

- Science Outcomes

For/With

- Target Audience (Includes Transfer, Use)

Results Chain

- Progress toward Social and Economic Outcomes
- Social and Economic Outcomes

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### Research Impact Assessment: Outcomes and Questions

<table>
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<tr>
<th>Research Program</th>
<th>For/ With</th>
<th>Results</th>
<th>For/ With</th>
<th>Results Chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources</td>
<td></td>
<td>Target Audience (Includes Transfer, Use)</td>
<td>Science Outcomes</td>
<td>Target Audience (Includes Transfer, Use)</td>
</tr>
<tr>
<td>Activities &amp; Outputs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expenditure? (Funds, People, Tools)</th>
<th>What did the programme produce?</th>
<th>Who did/might the output transfer to? (relevance)</th>
<th>What science outcomes have occurred?</th>
<th>Where has/might science outcomes be applied? (relevance)</th>
<th>What progress is being made?</th>
<th>What social, or economic outcomes have occurred?</th>
</tr>
</thead>
</table>

How does this compare to others?

Value for Money? Was it Worth It?
What did programme cause/contribute?
How can programme impact be improved?

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Research Impact Assessment: Outcomes and Indicators

Typical Indicators

| Expenditures Capacity measures | Quality of outputs; Volume; Esteem; Range of interactions | Dissemination of research; Engagement, collaboration in research; Industry engagement | Knowledge advances; Research tools, methods; Knowledge exchange capacity (networks); New research capacity | Transition to application Translational or cross-functional teams | Inform/influence decisions (product development, policy, practice, attitudes) Product commercialized Policy/Practice implemented; Behavior changed | Health status Quality of Life Security Environmenta l Quality Sustainability | Production levels Income levels Cost savings Jobs Competitive-ness |

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In summary, key messages are

- Performance-based (or results- or evidence-based) management is a worthy objective.
- Define programme strategy because that is your performance plan.
- Then choose a balanced set of performance indicators. What gets measured gets done.
Selected References


ADDITIONAL EXAMPLES
Example: Model for Technology Development

**External Factors**
- Market Needs/Opportunities
- DOE business infrastructure
- Congressional earmarks
- RD&D progress outside EERE
- Characteristics of competing & supporting technologies

**Technology Readiness**
- RD&D capabilities/infrastructure
- R&D Advances (non-stage gate)
- RD&D stage
  - Preliminary investigation
  - Detailed investigation
  - Development
  - Validation
  - Commercial launch
- RD&D cycle time
- Technology characteristics
- Breadth of applications
- Knowledge transfer & utilization
- Options value of technology

**Market Readiness**
- Knowledge infrastructure
  - Access, adequacy of tech info (mkt assess, decision support tools, websites, general ed.)
- Policy/Government infrastructure
  - Supportiveness of codes, standards, regulations, incentives, physical infrastructure
- Business infrastructure
  - Manufacturing, distribution, installation, and servicing capacities
  - Financial capacities
  - Economic attractiveness (NPV, IRR, ROI) to supply chain; competitive advantage
- End user
  - Visible demonstrations of technology/practice
  - Economic attractiveness (NPV, IRR, ROI, payback) to end user; relative advantage

**Technology Attractiveness – Market Acceptance**

**Ultimate Outcomes**
- Market size & share
- Energy benefits
- Environmental benefits
- Economic benefits
- Security benefits
- Spillovers in market

**Program Management**
- Portfolio balance
- Human capital
- Stakeholder involvement
- Program infrastructure
- Performance-based planning
- Fiscal responsibility
- Quality implementation
- Efficiency
- Continuous improvement

**External Factors**
- State, local, other federal policies and incentives
- Economics (Material & labor costs, energy prices, etc.)
- Social/Cultural norms (preferences, time horizon, etc.)
- Characteristics of competing & supporting technologies
Example: Logic of a Basic Research Program

Manage Resources: expenditures by types of activities, skilled staff, core competencies; environment for quality research, soundness of research planning and evaluation, use scientific method

Activities
- Identify and state the problem
- Develop, test and build research tools
- Do research and report findings
- Exchange knowledge in papers, conferences, etc.

Outcome and Results
- Growing consensus on problems
- New techniques to research problems
- Growing convergence on solutions to problems
- Apply ideas of others in research

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Potential impacts of research
Use in R&D or Commercialization
Actual impacts of the research

Reach targeted partners and customers; other researchers, laboratories, students, universities, applied researchers and technology developers, industry; attendees at conferences, readers of publications