

Innovazione e sviluppo del prodotto

R&D performance measurement

R&D performance measurement

- The problem:
 - High uncertainty
 - Intangible results
 - Lapse between investments and returns

Traditional measurement

- Input measurement:
 - R&D expenses
 - R&D investments
 - N. of researchers
 - ...
 - expressed in absolute values or relative values (% with respect to turnover or profits)
 - Representing not only the quantity but also the quality of input
 - Example: % of employees with PhD
- The underlying (debatable) assumption is that the higher the input, the higher the output

Output measurement

- Directly referred to the R&D output
 - n. patents
 - n. new products launched
 - N. of process improvements introduced
 - ...
- The underlying (debatable) assumption is that there is a positive correlation between the R&D output and the economic value generated

Impact measurement

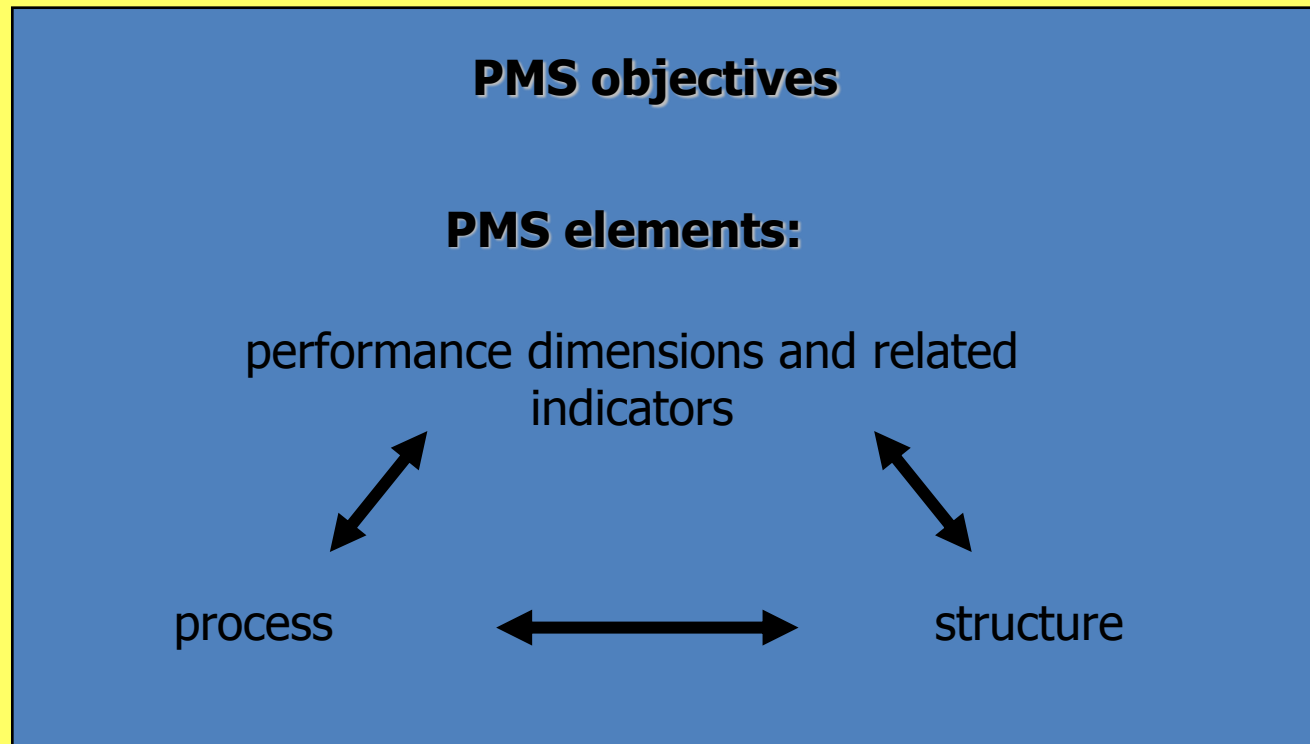
- Measurement of the economic-financial impact generated by the R&D output, in terms of, for example:
 - Cost reduction
 - Turnover increase
 - Market share increase
 - Profits from new products / services
 - ...
- The underlying (debatable) assumption is that there is a positive direct correlation between the R&D results and the economic-financial performance

Process measurement

- Opening the R&D box and evaluating the internal processes
 - For example, Chiesa et al. Technical Innovation Audit framework

A systemic approach to R&D performance measurement

Performance measurement system features



PMS objectives

- Motivating researchers
- Monitoring activities
- Evaluating the economic impact of R&D projects, selecting projects
- Improving R&D performance
- Coordination and communication
- Reducing uncertainty
- Fostering learning
- Supporting decision making

PMS structure

- Definition of the **control objects**:
 - The R&D units and/or
 - The research and development units separately and/or
 - Technological area units and/or
 - Business unit R&D units and/or
 - Project teams and/or
 - individuals

Performance dimensions (or perspectives)

- According to a “Balanced Scorecard” approach, several dimensions of performance can be considered:
 - Economic financial;
 - market;
 - Learning and innovation;
 - Internal efficiency;
 - Alliances and networks.

R&D performance indicators

- For each dimension of performance it is possible to identify and use several different indicators:
 - input, output, process indicators;
 - Quantitative and qualitative indicators
 - Monetary and non monetary indicators.

R&D performance measurement process

- The process of R&D performance measurement is defined in terms of:
 - **Frequency** of measurement
 - **Reference standard** for comparing actual and expected performance
- **standard** can be:
 - Defined by similarity with other known activities;
 - Defined *ad hoc* for the specific type of performance indicators;
 - Defined by external benchmarking.
- **frequency** can be:
 - Regular (weekly / monthly / yearly.....)
 - By milestone

Designing the R&D PMS

Contextual factors

Strategic factors:

corporate strategy,
business strategy,
competitive context,
social-cultural-political-legal context

R&D factors:

R&D environment:
(objectives, organization, activities)

Available resources
(people, IT systems, competences)

Performance measurement system features

PMS objectives

PMS elements:

