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Role and types of evaluation in economy of innovation

Innovation is a very important process for companies in order to ensure their development. Several new actions and strategies are implemented by companies to face market requirements and increase their performance. A good knowledge of the innovation process and the organization of the company is necessary to enable managers to manage them effectively and adapt them to the challenges and changes in their environment

Evaluation supports all other professions and in turn is supported by many of them; no profession can excel without evaluation (Stufflebeam and Shinkfield, 2007). Evaluation is therefore ubiquitous and serves to improve all aspects of society. It cuts across all areas of knowledge, production and services; it has important implications for maintaining and improving services and protecting citizens in all areas of society. Moreover, it covers a wide range of entities: school curricula, bookshops, museums, hospitals, physics, justice, telecommunication services, environmental policies, disease prevention, national defence, etc. Evaluation in general is intended to make a judgement on an object which can be individuals, projects, services, products, equipment, concepts, etc. It also allows to attribute a value to an object. It also allows a value to be attributed to this object according to certain criteria (De Peretti et al, 1998). According to (Stufflebeam and Shinkfield, 2007), the notion of value being the central term of evaluation, it essentially implies making a value judgment. Therefore, valuation is not value-free. It must be based on a comprehensive set of guiding principles and will need to determine the position or state of the valuer¹⁵ in relation to these values. For the same reasons, (Audisio, 1990) states that the purpose of evaluation is to identify and measure deviance from a reference standard. It also consists, according to (Jacot, 1991), in assigning a value, good or bad, better or worse, to an entity or an event. Evaluation can be seen as a process of giving certifications on issues such as validity, effectiveness, price objectivity, safety, efficiency, usability and probity of an object. It provides society with evidence and justification on merit, value, improvements to be made, accreditation, certification and if necessary a basis for stopping or abandoning the development of an object (Stufflebeam and Shinkfield, 2007). The technical steps involved in evaluation research are: collecting, organizing, analyzing and synthesizing information. (Stufflebeam and Shinkfield, 2007) summarize their view of evaluation as follows: "it is a systematic process of describing, collecting, reporting and using descriptive information and making judgements about the value, quality, probity, feasibility, safety, significance and/or residual value of an object".

Some scientists propose a seven-dimensional framework for measuring the innovation management process at the firm level. The dimensions to be considered in the measurement are: 1. resource management, 2. knowledge management, 3. innovation strategy, 4. organization of an innovation culture, 5. project portfolio management, 6. project management, 7. commercialization. (Romon, 2006) has carried out an inventory of the different modes of evaluation of innovation performance and has distinguished three modes of evaluation applied by companies. These evaluation methods depend on the type of indicator chosen (quantitative: profitability indicators in the business plan or qualitative: capacity to innovate) and the evaluation perimeter chosen (company, company entity or portfolio of innovation projects): 1. Quantitative evaluation of the innovation capacities of a company (an entity, a portfolio of projects). The quantitative performance indicators used are : - The number of patents filed, externally valued, - The productivity gains obtained as a result of a new production process, - R&D expenditure as a proportion of turnover (CA) generated by new products over the last x years or months, - The measurement of customer satisfaction, based on the number of products delivered within a short time, the rate of return to operation, etc. Evaluation of the performance of future operating activities resulting from innovation projects. This type of evaluation is frequently used by companies using enterprise resource planning (ERP) systems. It is based on financial indicators (business plan, net present value). Its objective

is to evaluate the profitability of the operating activities of the new products and processes that will result from the innovation project that the company is considering launching. 3. Qualitative estimation of the gains from innovation projects. In this mode, we define what the sponsor expects from the potential innovation project in qualitative terms: commercial impact, capacity to enrich the company's technological assets, image effect on all the company's activities, etc. A value is given to the project on each criterion and decisions are taken on the basis of a multi-criteria evaluation, without aggregation or weighting. All the information relating to the three evaluation methods developed is summarized in the below table:

Table 1: Typology of innovation performance evaluation methods according to the indicators used,

Mode of assessment	Tools used	-Scope of evaluation	Observations
Measures of the innovation capacity of a company, a sector of activity	Quantitative indicators, ex-post evaluation but also guide for future action	-Company - Company entity - Project portfolio Innovation -Sector of activity	Indirect measurement of data accessibility performance cannot be used to select which innovation projects are launched
Measuring the profitability of the operating activity resulting from an innovation project	Quantitative Indicator - A priori assessment	Innovation project: Decision making to launch, allocation of external funding -Possible aggregation across a range of innovation projects	The reliability of the valuation depends on the reliability of the operating assumptions
Qualitative estimation of gains from innovation projects	- Qualitative indicators Quantitative multi-criteria evaluation (heuristic Theory) -A priori evaluation but also feedback	-Innovation projects: Launch decision making, feedback. -Set of innovation projects in the framework of a multi-project management: arbitration, feedback	Leaves room for the sponsor of the innovative project to make strategic decisions

Source: indicators used, source (Romon, 2006).

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