

Dan SERGHIE  
Romanian Foundation for Business Intelligence, Iasi  
Carmen NISTOR  
Doctoral School of Economic and Business Administration,  
Alexandru Ioan Cuza University Iasi

# A REVIEW OF COLLABORATIVE INNOVATION PERFORMANCE WITHIN MULTINATIONALS

Methodological  
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## Abstract

*Many organizations make collaborative learning with other entities an integral part of their business. But leaders must measure the performance of innovation. Declaring a collaborative and innovative perspective in the mission and vision of a company is not sufficient. It is necessary to measure the process and results to justify investments in research and development (R&D) and ensure continuity of the company's success. Over the years, researchers proposed various models for measuring the performance of collaborative innovation within companies. The purpose of this article is to review the existing literature on collaborative innovation network in order to identify the main approach used for measuring its performance. As many studies show, notable results were obtained in the case of multinational corporations (MNCs). MNCs are seen as the main vehicle for innovation. They are the first who developed international network of collaborative innovation based on R&D expenses. As a result, we first focus on the motives for which MNCs are considered the main developers of these networks. Furthermore we discuss the existing literature for measuring performance of collaborative innovation networks and, at last, we develop a model for evaluating collaborative innovation performance based on previous research.*

## 1. Introduction

In the last decades, the internalization of technological capabilities of multinational corporations has received an increased attention from researchers worldwide. While some studies focused on the share of innovation based on foreign activity, others considered the growth processes leading towards an innovative and collaborative network.

Previous researches (Dunning, 1993) associate the growth and international expansion of MNCs with the exploitation of firm-specific advantages and a stronger commitment to foreign markets. Commitment is viewed as part of an ongoing process which influences, in the end, the entire organisations in terms of objectives and adopted strategies.

While the market of a MNC is international, the same product will differ from country to country. In order to adapt product features to country characteristics, MNCs will have to develop specific line of production in its subsidiaries. As a consequence, roles of subsidiaries and the dispersion of resources will differ within the MNC network.

## 2. The multinational corporation – network of innovation and collaboration

The increased distribution of knowledge and know-how within multinational has been framed by Cheng & Bolon (1993) in the context of advanced R&D capabilities from home country. Their study show that large MNCs undertake between 5 percent and 25 percent of their R&D outside their home country.

Later, the focus shifted on MNCs subsidiaries and their role in exchanging knowledge and information in the MNC network. Hedlund (1986) presents the key characteristics of a MNC organization: multi-centered and differentiated internal structures, significantly enhanced strategic roles of foreign subsidiaries, lateral information flows, integration primarily through normative control, flexibility in organizational tasks and governance mechanisms, and a radical problem orientation.

Prahalad and Doz (1987) identified the environmental pressures on MNCs along three dimensions: (1) the need for global integration of activities, (2) the need for global strategic coordination, and (3) the need for local responsiveness. They argued that the needs for global integration of activities and global strategic coordination are highly correlated and, as a result, combined the three into two essential dimensions: global integration and local responsiveness (Maurer, 2011).

Hedlund & Ridderstråle (1995) focused on MNC subsidiaries role in the global innovative network. The results of their study show that externally

embedded knowledge transfer is more likely to be organised on a discrete basis through a product development project teams rather than take place informally.

Adopting a configurational approach, Birkinshaw & Morrison (1995) explored the ways in which subsidiary 'structural context' varies across subsidiary role types. Structural context characteristics were determined through a discussion of the underlying principles of the 'hierarchy' and 'heterarchy' models of multinational organization. The main findings of the study show: (1) a higher strategic autonomy in world mandates than in local implementers; (2) a more internationally configured value-chain in world mandates and specialized contributors than local implementers; (3) lower levels of internal product flows in world mandates than the other two types; and (4) a significantly lower performance in specialized contributors.

According to Kuemmerle (1997) technological competencies are created thanks to the MNCs' activities international dispersion. Thus, one of the most important methods of coordinating the international management of R&D is a technology steering committee.

Taggart (1997) has developed an insightful framework linking autonomy and procedural justice to evaluate subsidiary strategy. He has argued that, from the perspective of subsidiary management, the ideal situation, at least in a context of strong subsidiary-specific advantages, is obviously one of both high autonomy and high procedural justice. This situation is, according to the author, difficult to achieve as it requires the continued investment of scarce resources in 'social lubrication' and 'a wide array of well developed leadership and management skills being deployed at headquarters and affiliate levels.'

Knowledge tapping, or the ability to acquire, combine, disseminate and utilise knowledge and technologies in multiple business contexts is increasingly considered to be a distinctive competitive advantage of MNCs. There is, however, growing evidence that innovation in the MNCs cannot be understood as either local or global, but that sources of input shifts over the length of the innovation process Zander & Sölvell (2000).

In order to evaluate the collaborative innovation performance within MNCs we propose a framework that consists in quantifying the idea and methods used to apply them.

## 3. Empirical evaluation of collaborative innovation performance

On one side, the model of collaborative innovation management quantifies how fast ideas are generated, both qualitatively and quantitatively, and the methods used to select those suited for

network's strategy and objectives. On the other side, the model measures how efficient and effective are the ideas implemented. In other words, focuses on the newly created added value.

To evaluate collaborative innovation performance two stages should be completed:

1. Collecting data from analysis reports, conducting face to face interviews and conducting studies sampled on managers and leaders involved in inter-organisational collaborative innovation processes.
2. The development and use of research tools for measuring innovation performance.

The estimation model proposed for measuring collaborative innovation quantifies two measurable parameters: the generation and selection of ideas and efficiency capitalization of innovation in the market, as seen in Figure no. 1.

### **3.1. Generation and selection of ideas in collaborative structure (incubating)**

The processes through which performance is measured succeed from identifying production areas of production (possibly adjacent) to process of generating ideas (assessed by quantitative and qualitative performance indicators) and subsequently by processes of selecting ideas which will be capitalized on the market.

To quantify performance, we propose the following criteria:

1. Network identity (Serghie, 2013a)
2. Organizational incentives
  - Sub factors:
    - Leadership
    - Motivation
    - Communication
    - Learning
3. Network composition
  - Sub factors:
    - Resources (financial, human)
    - Mediators for communication and interaction
    - Network degree of "liquidity"
    - Communication intensity
    - 
    - Technical characteristics of network structure
4. Context
  - Sub factors:
    - Diversity (Serghie, 2014)
    - Transdisciplinarity (Serghie, 2013b)
    - Perspectives of strategic and continuous innovation.
5. Selection of ideas that will be transformed into innovations

This last criterion is used for identifying parameters and evaluation panel under which ideas are evaluated and prioritized. These criteria are consistent with the strategy and objectives of the organizations involved in collaborative structure. Evaluation activities included in this stage involve

internal and external key experts able to identify capitalizing opportunities for the knowledge transferred through innovative ideas.

The efficiency of collaborative model in providing innovation is justified by the skills used for resources indicated by the researcher. The performance of collaborative structure involves incorporating the model of leadership skill, not just as a simple competence, but at a certain level of wisdom. Network elements such as "creativity", "enlightenment", "error", "flat hierarchy", "connectivity" are preliminary observations not related to the ultimate goal of producing innovation. They are simple guidelines for leaders and community members which contribute in describing the model.

Thus, the generation of innovative ideas is a stage from which we can extract the independent factors, quantifiable, of performance measurement model for collaborative innovation through analysis of: tools, methods, systems, resources, actors, communication media, databases, areas of knowledge etc. The model of obtaining performance involves maximizing results with an established level of inputs: human resources, expertise etc. Operational prospects of this phase consist of systematic search and combination of information, data and knowledge. All these actions require time and communication technology with customers, suppliers, technology leaders etc.

### **3.2. Valorisation of innovation on the market**

The stage of obtaining value from innovation is the final goal. It brings initiator organisations consolidation results on the market through measurable competitive advantages of financial performance obtained from: increase of sales, cost reduction or efficient use of assets.

Increase of sales can be obtained through new products or services, accessing new markets, developing faster and better fabrication processes, larger quantities of products for the same customers, better service, innovation of sales practices etc.

Cost reduction can be achieved as a result of: developing R&D area, implementing new findings in the production processes, eliminating redundant stages of different processes in diverse areas of organisation, improving decisional processes etc.

Processes innovation has a notable influence in operating cycle. For example, a better use of assets will decrease the need for working or invested capital. In other words, the wise use of innovation will help organisations to make more effective the activities carried out within all departments (production, marketing, sales, acquisitions, human resources, financial management etc).

In order to quantify performance, are used the following criteria:

1. Resource management in the implementation phase of innovation

Sub factors:

- Execution time for turning ideas into decisions, developing innovation and its delivery on the market
- Financial resources

2. Network strategy (platforms could be a major advantage in attracting people from several points of view – Luca et al., 2012)

Sub factors:

- Roles and responsibilities related to innovation
- Planning business processes

3. Obtaining organizational added value (profitability, competitive advantage, market niches, etc.)

The elements that differentiate the various models proposed by researchers have a major importance if we consider the measurement of comprehensive income (in terms of innovative performance of inter organisational network) or are not that important if the research purpose through the model consists in reaching a certain goal (example: an incremental innovation of product, process or service etc.).

#### 4. Conclusions

The proposed framework for evaluating performance of innovative collaborative networks uses multiple criteria during two distinct stages: incubation and selection of innovation and innovation valorisation in the market.

We consider the rational analysis of factors and consequences of innovation in a network as a dominant research path. Also, metaphysics and transdisciplinary perspective together with systems related through inter-structure interaction can be viable starting points in developing new hypothesis and assertion of similar performance facts.

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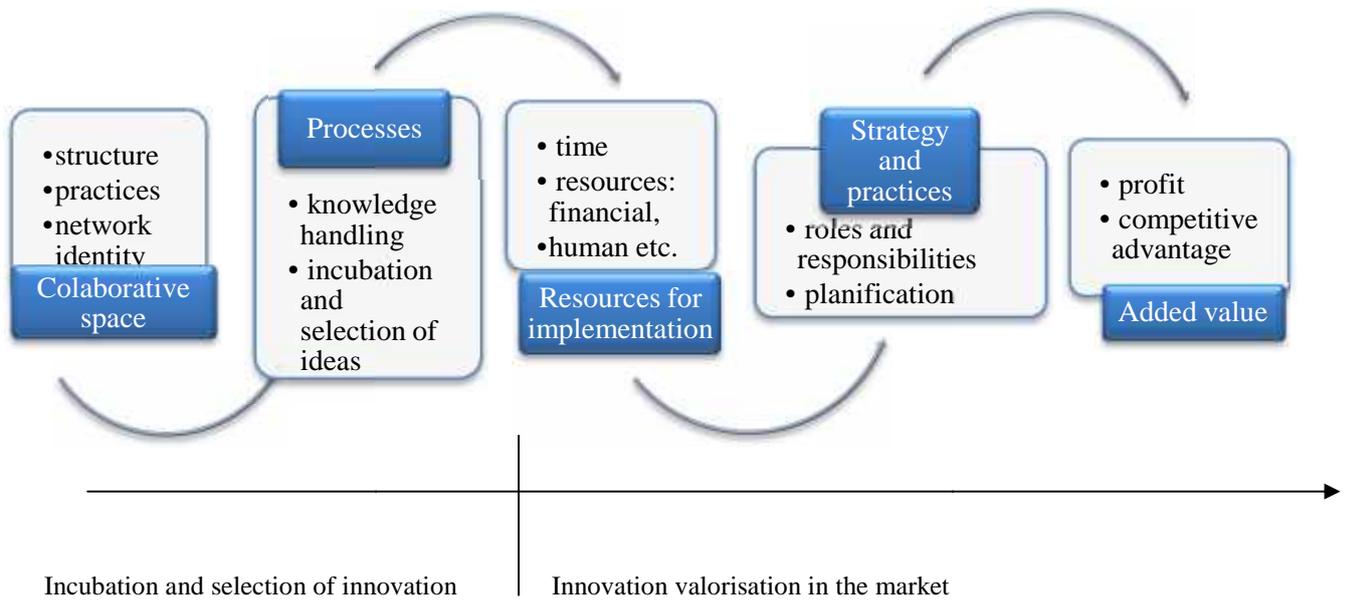
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Appendices

Appendix A



**Figure no. 1. Estimated parameters for collaborative innovation performance**  
Source: authors projection.

