

## CREATIVITY AND PROBLEM SOLVING IN THE DEVELOPMENT OF ORGANIZATIONAL INNOVATION

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**Abstract:** This research focuses on creativity and innovation management in organizations. We present a model of intervention that aims at establishing a culture of organizational innovation through the internal development of individual and team creativity focusing on problem solving. The model relies on management's commitment and in the organization's talented people (creative leaders and employees) as a result of their ability in defining a better organization. The design follows Min Basadur's problem solving approach consisting of *problem finding, fact finding, problem definition, solution finding and decision implementation*. These steps are carried out using specific techniques and procedures that will link creative people and management in order to initiate the process until problems are defined. For each defined problem, project teams will develop possible solutions and implement these decisions. Thus, a system of transformation of the individual and team creativity into organizational innovation can be established.

**Keywords:** Organizational creativity, Organizational innovation, Creative leadership, Creative problem solving, Kelly's Grid.

### ORGANIZATIONAL INNOVATION

Innovation within the framework of a knowledge-based economy goes far beyond the linear or chain linkage models that have long been used in innovation theory to explain innovation processes in high-tech industries (Strambach, 2002). Innovation is to be understood as the result of cumulative dynamic interaction and learning processes involving many stakeholders. Here innovation is seen as a social, spatially embedded, interactive learning process that cannot be understood independently of its institutional and cultural context (Cooke Heidenreich, & Braczyk, 2004; Lundvall, 1992; Freeman, 1998). Since Roberts' (1999) definition [of innovation] maintains that an innovation can only be seen as innovation if it is has implementation and commercial value, it is important to measure the impact of innovation. Ravichandran (2000: 263) believes that measuring the impact of innovation activities will depend on (1) the typology, (2) the degree of departure from the preceding product, service or process, (3) the extent of usefulness of the innovation and, (4) the volume of profitability generated.

Strambach (2002) suggests that the interdisciplinary view of innovation systems is concerned with understanding the general context of the generation, diffusion, adaptation and evaluation of new knowledge which determines innovativeness. It follows that the focus is on non-technical forms of innovation as defined above. Common characteristics of the different approaches to innovation identified by Edquist (1997) include (1) innovation and learning at the centre, (2) a holistic and evolutionary perspective, and (3) an emphasis on the role of institutions. The

increasing interdependence of technological and organisational change is a significant feature of systems of innovation, which means that technological innovation and organisational innovation have become increasingly important. These are combined with more diverse knowledge requirements which include not only technical know-how, but also economic, organisational, and sociological knowledge and competencies. The second reason for the increased interest in non-technical innovations is associated with the connection between the organisational innovation and the corresponding learning capacity. The acceleration of change that is part of the globalisation process means that organisational learning processes are more and more important for creating and maintaining competitiveness.

Ultimately, whether innovation is successfully diffused, requires some absorptive capacity on the part of the target audience. Cohen & Levinthal (1990: 128) define absorptive capacity as ‘... the ability of a firm to recognise the value of new, external information, assimilate it and apply it to commercial ends.’ The diffusion of the innovation is normally dependent upon the specific innovation typology, the innovation champions, the time element to successful diffusion and the absorptive capacity of the adopters. Schnepf, Bhambri, & Von Glinow (1999) define technology transfer as a process whereby the knowledge is passed from one entity to another. This process involves the dissemination of documentation describing the technology, the training (called software) to transmit the knowledge and the transfer of the equipment, components or raw materials (called hardware). Gee (2006) maintains that technology transfer is the application of technology to a new use or a new user. Thus, technology transfer links the existing technology base and the innovation process in order to increase productivity.

There is no doubt that innovation has become a core driver for growth, performance and valuation. Although there are no best practice solutions to seed and cultivate innovation, Barsh, Capozzi and Davidson (2008) identify three building blocks for innovation: (1) formally integrate innovation into the strategic management agenda (thus innovation is managed, tracked and measured as a core element of the organisation’s growth); (2) Create conditions that allow dynamic innovation networks to emerge and flourish and (3) Take explicit steps to foster a culture of innovation by valuing ideas and collectively overseeing risk. This is complemented by taking the following steps to advance innovation: (1) Identify the type of innovation that can drive growth and strategic objectives; (2) Add innovation to the formal agenda at regular leadership meetings; (3) Set performance metrics and targets for innovation and (4) turn selected managers into innovation leaders.

In organizational innovation, the unit for innovation is the organization itself (Wolfe, 1994). Although the outcome of the innovation may be process, product or service, the innovation needs to be undertaken through the creative inputs of the individuals and/or the management. We will suggest a project approach.

## **ORGANIZATIONAL CREATIVITY AND INNOVATION**

Even though authors such as Stein (1994), describe creativity as a *process that results in novelty which is accepted as useful, tenable, or satisfying by a significant group of others at some point in time* and innovation as *the intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organization or wider society* (West and Farr, 1990), it remains difficult to separate the idea from its implementation, especially when we move from the individual level to team and organizational levels.

On the other hand, innovation concerns the processes of implementation, relying mainly on organizational communication and power and, as the product of that communication process, innovation appears connected to what is perceived as new and useful by someone other than its originator, or as the putting to use of an idea (Kanter, 1983), in the domains of production,

adoption, implementation, diffusion, or commercialisation of creations (Kaufmann, 1993; Spence, 1994). Once again, the construct of creativity remains exclusive to the relation established between the creator and his product, where nor even originality and usefulness are important, but only the “trying to do better”, connected to cognitive and emotional processes taking place at the individual level (Sousa, 2007)

Even if we relate creativity to problem definition, and innovation to decision implementation, this last step requires a series of problem definitions, in order to carry out a decision or an idea, thereby making it difficult to separate these concepts at an organizational level. In fact, when we move from the individual level to the team and organizational levels, creativity and innovation become more and more difficult to separate, so that we must agree with Basadur (1997), when he says there is no difference between organizational creativity and innovation. Therefore, the moment we move to other levels besides the individual, we will use these terms (creativity and innovation) as synonyms, in order to simplify the discussion, and we refer organizational creativity, in the intervention model, depicted in Figure 1, as a *system devoted to enhance creativity in organizations*, thus using the definition proposed by Basadur .

### **CREATIVE PROBLEM SOLVING USING BASADUR’S *SIMPLEX* MODEL**

From the Creative Problem Solving (CPS) approach, Basadur (1997, 1999, 2000) proposed a new model, the Simplex model. Basadur’s Simplex is a cyclic process in three distinct phases and eight steps. In each step there is a moment for active divergence, when individuals or groups produce as many ideas or options they can find, in a supporting climate in which judgment is deferred to allow the perception of new relationships between facts. During the divergence moments everyone must make extended efforts to avoid stopping too early, before all possible options have been produced. During active convergence, the participants will select one or more options to carry on to the next step. One last skill will allow the process to go on systematically through its eight steps and three phases: it’s called vertical deferral of judgment. This skill helps the participants to distinguish between unclear situations and well defined problems, and between defining a problem and solving a problem.

First phase – Problem definition.

The following steps are involved:

1. *Problem finding*

This step consists in identifying problems and opportunities for change or improvement within or outside the organization. In the first moment of active divergence, judgment deferral is required and sustained until the participants feel they cannot collect more relevant problems or changes opportunities. It is then time for active converge, selecting the problems that will deserve further exploration.

2. *Fact finding*

Begins with a divergence moment, when the group defers judgment in order to gather as many information as possible on the selected problem, always accepting all the data that is produced. When there is a perception that all useful or possible facts have been collected, the group can converge and select a few facts that are considered to deserve further expansion.

3. *Problem definition*

In this step the group will reformulate the facts selected into creative opportunities or challenges. Then the more promising problem will be selected to carry on to the next step. For Basadur et al. (1994) this is a crucial step and skilled participants will really help the process by asking the right questions that will be answered further on. In this

step they elaborate maps reframing the problems using the question “How might we...”, considered the most important question in the Simplex process. Another question will help to deepen the problem: “What is blocking...”, “What is stopping..” or “why”. The challenge mapping process helps to see the hierarchy or problems and the relations between them, clarifying the big picture.

Second phase – Problem solving.

The following steps are involved:

4. *Generating potential solutions*

This step requires the participants to actively create as many potential solutions as possible to solve the selected problems or challenges. Divergence moment allows creating the most radical and apparently impossible solutions. In the convergence moment, some of them will be selected for evaluation.

5. *Evaluating potential solutions*

Here it is required to generate as many criteria as possible to help evaluating the potential of each solution that has been developed in the previous step. Having established the criteria, participants will evaluate the potential solutions against each criterion and decide which should be implemented.

Third phase – Solution implementation.

The following steps are involved:

6. *Action planning*

Divergence skills are required to generate a number of specific actions that may help the implementation of solutions generated previously. Then convergence skills will allow selecting the most adequate actions.

7. *Gaining acceptance*

This step aims at overcoming resistance to change and involve people needed in the process to assure its feasibility. This is directed essentially to people who did not participate in the earlier steps, but whose commitment is indispensable to bring the project to success.

8. *Taking action*

Taking action is not the final step of the model, assumed as a circular process. As Basadur (2000) mentions, the organizational level is a continuous flow of products, services and processes that foster a better interaction with the environment. In this step, participants may find reasons not to fully implement the project, as a result of fear of failure and of resistance to change. To undermine these problems the author adopts Lakein (1973) techniques that advise to start with simple, specific and realistic actions, to address the fear of unknown by analyzing what could happen and then generating ideas to cope with fear of failure, trying to turn it into advantages.

## **PROPOSED MODEL OF ORGANIZATIONAL INNOVATION USING CREATIVE PROBLEM SOLVING**

After an initial organizational investigation of all information and the problems the organization faces (*problem finding*) using interviews with management (the *formal approach*), an understanding of how it works from the point of view of its employees (the *informal approach*)

is required. As it is not feasible to ask each individual, this can be made by identifying the implicit theories (ideas and concepts) people use to describe the organization (*fact finding*). In fact, most research in an organizational context has to deal with people who often speak in one way, but act differently. As Argyris (1999) reports, *espoused theories* (i.e., values and objectives that people declare as guiding their behaviour) differ from *theories in use* (the latter which really guide behaviour). Using Kelly's repertory grid method (Kelly, 1963) to design a questionnaire it becomes easier to use theories and overcome the espoused ones.

In his theory of personal constructs, Kelly stated that people anticipate events and that their behaviour is thus guided by this interpretation. Kelly's method allows people to vocalize their perceptions (sometimes in a way they have never verbalized before). Through a structured interview, this method allows us to design a questionnaire from the participant's viewpoint, thus reducing the observer's bias.

Using an organizationally adapted questionnaire, it becomes possible to spot weak and strong points in the organization. Although the questionnaire can address any organizational climate issue, it is preferable to ask people to describe their line managers in order to identify creative leaders and their teams. Nevertheless, other types of climate questionnaires (D'Amato & Burke, 2008) can be used and variables analysed, if some type of organizational evaluation has already been made.

Creative leaders, preferably designated by their teams, are interviewed and their perceptual maps identified in order to have a first approach to *problem identification*. Perceptual maps can be obtained through content analysis of the responses and then using factor analysis to categorise these (Sousa & Monteiro, 2005). Here, the innovative leaders are not the ones who have good or creative ideas, but those who develop the co-workers creativity and ability to innovate, in a definition quite consistent with Basadur's (2004) creative leadership conception. An innovative manager permanently seeks the continuous quality improvement and gets the co-workers to invest in the constant enhancement of the performance, which is the essence of innovation.

As can be seen from Figure 1, the 4<sup>th</sup> step consists of *managers and creative people teaming up*, where talented employees are identified and integrated into development teams together with other technicians in order to contribute to the project development. These teams receive creative problem solving training and list organizational problems from which management will select those that deserve to be subjected to the 'idea finding' step, until a decision is made and implemented in the last step (called *project implementation*). Creative people, either managers or employees, are committed to their work and organization, and so they may bring in important issues, provided that top management values their work and ideas. In fact, according to a Gallup Management Journal (GMJ) survey (Hartel et al., 2003), engaged employees are more likely to "think outside of the box" and produce creative ideas than disengaged people; they also are more receptive to new ideas. The research concludes that engaged people tend to find and suggest new ways to improve their work and business processes, which may lead to the assumption that the more creative people have a deeper understanding of the organizational processes, being in a privileged position to identify, define and find the relevant organizational problems

The creative problem solving training (Isaksen, Dorval & Treffinger, 2000), is a cognitive training method for the development of critical and creative thinking abilities, represented in the mental skills of *data conceptualizing, analysis, synthesis and evaluation, as well as in the process of gathering information through direct observation, experimentation or reflection*. This further allows for the training of leadership and team work skills. This methodology uses a series of tools and structures with ill defined problems, the latter of which do not have a single possible solution, or problems that have not produced satisfactory solutions using other problem-solving methods. It includes the steps of *problem finding, fact finding, problem definition, solution finding and decision implementation*. Each of these steps has two moments: one divergent, in which the group tries to find the maximum possible number of alternatives; and another convergent, in which only one alternative (or just a few) is selected. The process continues until a system of organizational innovation is developed.

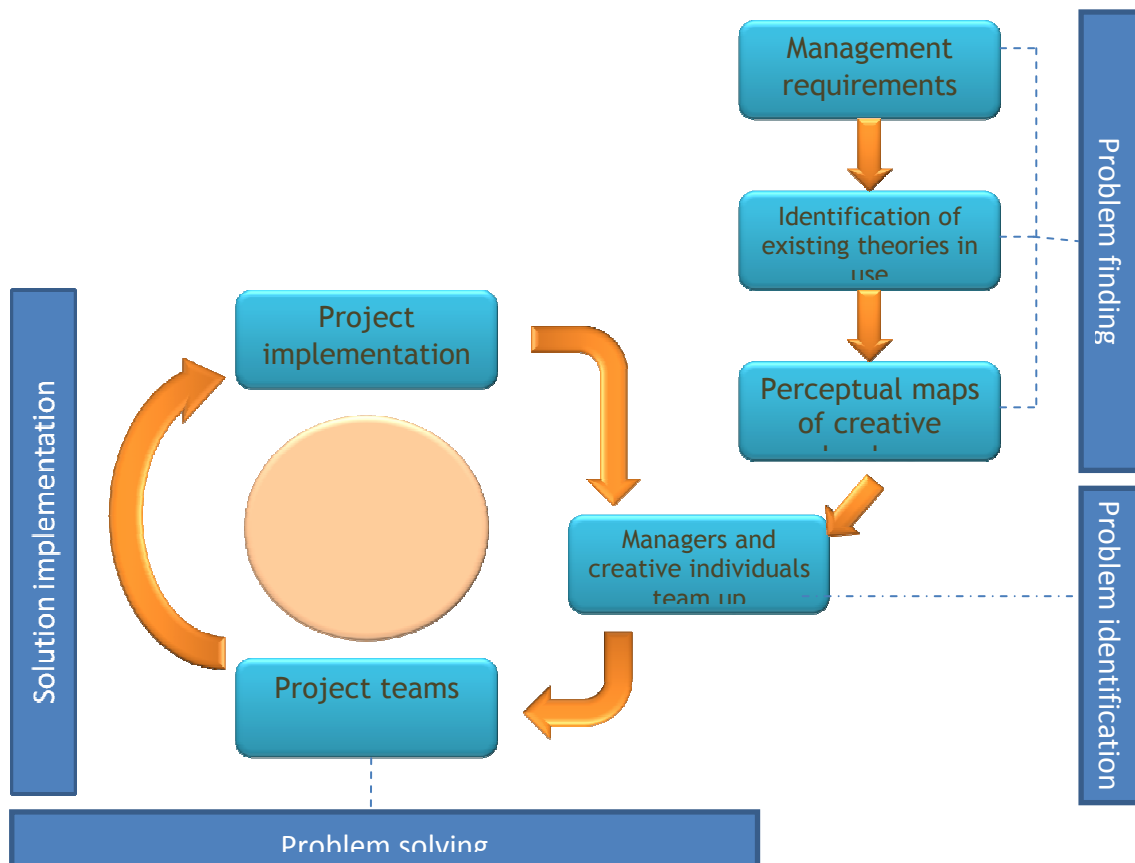


Figure 1: Proposed model of organizational innovation using creative problem solving

Other central aspects of organizational innovation (*management control measures, knowledge management, organizational communication and culture, and employee commitment*) will be addressed in this cycle, for instance the outcomes of the change process that will establish (if successful), a different culture in the organization, allowing for a shared thinking process that will facilitate knowledge management and the fit between the organization and its changing environment (Basadur & Gelade, 2006).

If successful, the model will allow for the creation of a culture of innovation within the organization, committing more and more of its constituents, as more development projects become profitable innovations (Basadur & Paton, 1993; Isaksen et al., 2000).

## CONCLUSION

This model of organizational creativity has proved to give useful contributions to organizational innovation, in the steps before solution implementation, due to the research and applications made (Sousa & Monteiro, 2005; Sousa, 2007). As the creative problem solving tools have already demonstrated their usefulness in finding solutions and helping organizations to improve, what remains to be proved is the value of selecting and organizing creative people in an organization, by giving them time, space, knowledge and the opportunity to team up and direct their individual creativity to the organizational problems. The process of developing organizational innovation and creativity is complex and non-linear with ups and downs, which can only give rise to a culture of innovation with the management's total commitment. Future research will allow for testing of the model, in its wide complexity, and will provide new insights into the process of organizational creativity and innovation.

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