

# Relationship between creativity and product innovation: a literature review

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**Abstract:** Creativity and innovation became essential issues in the organizational environments, by revealing their importance to achieve the differential in dynamic markets. In this scenario, this article aims show how the relationship between creativity and product innovation is approached in scientific studies and suggest future research themes. Hence, a literature review was made using as a research source the “Periódicos Capes”, which after the filter, lead to the analysis of 40 papers published in the period 1990 to 2011. Examining the amount of publications per year, it was observed an increase in published articles of this thematic in the last five years, but despite this there is a gap in detailing the relationship between creativity and product innovation. As result, it this would propose that the creativity can be present in different ways in perspective to the innovation process: it’s conception, development or improvement, according to the integrative model proposed. This suggests that future research look into studies about the relationship between creativity and product innovation, applying research methods such as the action research, for example.

**Keywords:** creativity, innovation process, product, literature review.

## 1. Introduction

Creativity is an increasing topic of study in the academic and business environments, covering several areas of knowledge. One of the applications of creativity has focus in product innovation, inserted in context to globalization and of dynamics of market, in which the necessity of consumers is constantly changing and the reduction of a product’s longevity has been accelerated.

In this perspective, innovation becomes an element of importance for an organization looking for continuity in the market and achievement with a competitive differential. Academics of science organizations studied the innovation manager with organizational focus and in classification of types of innovation. However, it has not yet achieved a significant progress in the research to analyze the search generating ideas, theme that is inserted in creativity. On the other hand, psychology academics and others educational areas have directed their research of creativity focused on the development of potential creativity in humans with little emphasis in the area of performance.

This article is the result of a systemic bibliographic review development with the goal to answer the problematic: “How the Relationship between creativity and product innovation is being approached in scientific studies

published during the years 1990 to 2011?”. The research done of the published material inserted in this timeline (period) allowed visualization of the scenario of discussions related to this matter, identifying gaps existing in the scientific studies of this period and proposing future studies in the area.

This paper is structured in five sections. The first is the introductory, the second is the presentation of the search method used to do this study and the third is about the collected articles classification. In the fourth section the results of the literature analysis are presented and the final considerations and recommendations for future research about the theme are in the fifth section.

## 2. Method of research

The present research can be characterized based on its goal as exploratory (MIGUEL, 2010), as to the scientific approach as quali-quantitative (CRESWELL, 2007), and systematic literature review in relation to technical procedure applied in this study (PAI et al., 2004). Four phases were defined for its development.

In the first phase the following keywords were selected: innovation, product innovation, innovation management and

creativity. After using the tool “metabusca” of the portal “Periódicos CAPES - Coordenação de Aperfeiçoamento de Pessoal de Nível Superior”, the keywords were inserted in the appropriate fields to integrated the search. Besides this database, the research was made in search sites and electronic journals to have others studies related to the theme.

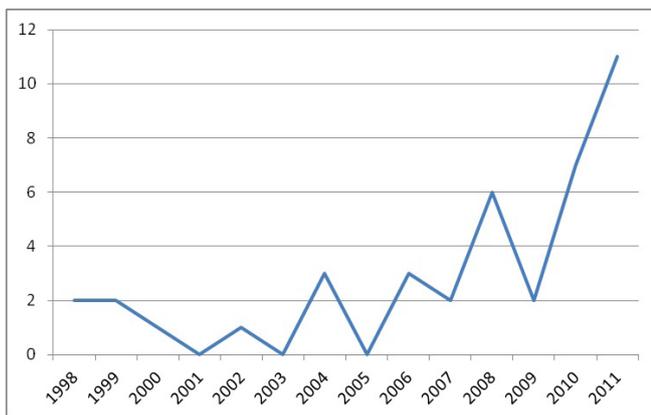
In the second phase the reading of resumes, introduction and conclusion of articles was conducted aiming to check the affinity of these publication with the theme. In total 40 articles were selected from 36 periodicals including one article of V CIPED (International Congress of Research on Design).

In the third, the classification of these papers was made according to their structure and content in the database. Through this, the main points were identified in articles related to the theme. The fourth phase analyzed the considerations of the articles with the goal to understand the relationship and divergences between creativity and product innovation in perspective in order to propose future suggestions.

### 3. Data extraction

Graphic 1 presents the quantification and historic of published articles between 1990 and 2011. According to the graphic, the year 2011 has the highest number of publications, however, among the articles used to analyze there weren't any publications identified related to the years 2001, 2003 and 2005.

In the articles identified, the types of study were classified as: case study, literature review, action research, experimental and survey, among which the literature review (42.5%) is the most predominant. In relation to approach, the classification was defined into three types: qualitative, quantitative and quali-quantitative, being the qualitative research the most present in publications analyzed. About the research focus, five types were considered: university, enterprise, theoretical focus, industry and product.



**Graphic 1.** Number of articles for year of publication.

The focus in enterprise is the most present among the texts analyzed (35%).

## 4. Analysis results

The understanding of a link between creativity and product innovation requires initially a brief understanding about these approaches. Thereby, the article presents some considerations about this area, grouped in the following dimensions: definition, importance in competitive current context and inhibiting and enhancers factors. This grouping aims to favor the analysis of aspects that are present in affinity between creativity and innovation and their relation to product development.

### 4.1. Consideration about creativity

In several areas of knowledge, creativity presents its relevance and contribution to human beings. According to this research, most published studies are connected with the area of psychology. Besides this, the publications present a link with the situation of the current market scenario, in that the requirement for qualification of services or products is increasing and the creative capacity becomes gradually a competitive differential to organizations.

For some authors, creativity relates to competitiveness, once the organization that has people with high creative potential will be able to do more and better than other enterprises, at a lower cost and further satisfy its consumers (SOUZA; SOARES, 2007). Others recognize that creativity has become indispensable to organization success, so that the leaders are trying to create an institutional frame in which it is inserted as standard in its culture (EIJNATTEN; SIMONSE, 1999). Table 1 presents the definitions of different authors about creativity.

Articles analyzed note that 13.15% refer to the use of a method to develop creative thinking, which present different interpretations to this methodological character: the production of creative ideas can be subjective, in that the factor of intuition would be present (PANTALEÃO; PINHEIRO, 2009), from steps more widespread with generation, selection and modification of ideas (YUAN; ZHOU, 2008) or structured methods, for example, the Sensitive Method Association - SAM (HSIAO; CHOU, 2004). Furthermore, it was mentioned the absence of a single model to show how the creative process is done in organizations, where only the factors can help this process (BRUNO-FARIA, 2007).

The differentiation in level of creativity demonstrates the existence of some limitations in creative skills in certain individuals, resulting in the search for elements that stimulate the development of creative capacity in people. In articles analyzed, it was observed some stimulator and inhibitor factors of creativity that vary with its administration style in different context. These factors are presented in Table 2.

**Table 1.** Definition of creativity.

Author	Definition
Goel and Singh (1998)	Refers to all activities that involve the generating ideas.
De Masi (2000)	It consists of a mental and practice process, still quite mysterious, in which only one person or group, after thought of some new and fanciful ideas, gets too makes them.
Bruno-Faria (2003)	Generating ideas of products, services of process that produce some valuable contributions to organization and/or for the welfare of people that work that context and that have essential elements for implementation.
Chang and Albuquerque (2004)	Open space to collaborators, so that there is receptivity of innovative ideas, the acceptance of the risk of error, time for implementation of ideas and support of persistence.
Parolin (2008)	It operates with a desire to create.
Pantaleão and Pinheiro (2009)	The capacity to think to reverse the rules, to designate new things starting form a different combination and coherent to knowledge existing.
Tremblay (2011)	Creativity is in regard to the capacity of individuals or groups to create, invent, imagine new something.

**Table 2.** Stimulators and inhibitors factors of creativity.

Stimulating factors	Inhibiting factors
Appropriate environment (BRUNO-FARIA, 2007; SOUZA; SOARES, 2007)	Paradigms (GURTEEN, 1998)
Organizational Culture (BRUNO-FARIA; VEIGA; MACÊDO, 2008)	Conflicts (TALBOT et al., 1992 apud ISAKSEN; EKVALL, 2010)
Multidisciplinary (BRUNO-FARIA; VEIGA; MACÊDO, 2008; EIJNATTEN; SIMONSE, 1999)	Hurry to create (ISAKSEN; EKVALL, 2010)
Interdisciplinary (BRUNO-FARIA; VEIGA; MACÊDO, 2008)	High level of occupational stress (ISAKSEN; EKVALL, 2010)
Routine change (SOUZA; SOARES, 2007)	Stress in workers (ISAKSEN; EKVALL, 2010)
Break patterns and open mind (PANTALEÃO; PINHEIRO, 2009)	
Trust (MARTINS; MARTINS, 2002)	
Motivation (YUAN; ZHOU, 2008)	
Autonomy (RUNCO, 2004)	

The theme of the complexity of the creativity level can be checked through many approaches, applications and interpretations. Therefore, for the formation of a creative and innovative team, the studies demonstrate suggestions that it is important to consider not only the technical knowledge of attendees, but also the real context of the job, the nature of groups, the personality of attendees and the subjectivity of each other.

#### 4.2. Approaches to innovation

The dynamism of markets and technological change makes the ability to treat efficiently the information a crucial factor for business continuity. However, to follow the changes in the market it is indispensable that corporations empower and transform this learning productivity and favorable results into outlined expectations. The innovation in the market appears like a challenge for organizations, and it is relevant that they appreciate factors that help in this process and consequently in its acceptance. As for

the concept of this term, various settings are presented in Table 3.

Among the bibliographic sources studied, 21.05% showed a vision of innovation and flexibility as a competitive criterion on the market and 18.42% refer to the use of methodology for innovation and product development.

To develop the product, the collection of “market information” is essential, which is useful for identifying the best ideas, aligned with company strategy and should be transformed in product concept (POLIGNAMO; DRUMOND, 2001). These ideas can be managed from many sources according to Kotler (2000): consumers, competitors, researchers, vendors, and senior management.

In the studied literature, 14 articles refer to factors that may stimulate or hamper the organization’s process innovation. Isidro Filho and Guimarães (2010) show that one of innovation strands characterized in understanding it from the perspective of their organizational determinants,

**Table 3.** Definitions of innovation.

Authors	Definition
Bruno, Fonseca Netto and Bruno (2011)	It's the process that transforms new ideas into new products or new procedures that lead to productivity gains.
Garcia and Calantone (2002)	It's the development and production of new products and services to get commercial success.
Bruno-Faria (2003)	Implementation of ideas, products and services with some degree of novelty and value to the company.
Pantaleão and Pinheiro (2009)	The search for something originally new.
Miranda and Figueiredo (2010)	It's understood as a process, not as isolated events.

this is organizational attributes that favor or inhibit development. Valencia, Jiménez and Jiménez (2010) point the importance of corporate culture, pointing out that the hierarchical culture can have negative effects on product innovation, instead of culture *ad hoc* that generates positive effects in the product innovation.

### 4.3. Creativity and product innovation: perceptions of the researched sources

A company aims to become creative and innovative because of global forces that influence it as well as the benefits derived from aspects of its business and prospects (ROFFE, 1999). As to the relationship between creativity and innovation, this author considers that idea generation is a critical part in the innovative process and creativity is the thought process that assists in this view, considering that improvements in these skills will lead to a greater likelihood of emergence of new alternatives, approaches and solutions to problems.

Souza and Soares (2007) comment about creativity appreciation in the fierce competitiveness of the times, in seeking fast and innovative solutions to organization's problems. Creativity is seen in their article as a differential that promotes the expansion of a sense creator resulting in innovation.

By registering in their article the difference between debate and conflict as two voltage forms, observed in the literature about organizational climate to creativity and conflict management, the authors Isaksen and Ekvall (2010) comment superficially about the relationship between creativity and innovation citing the idea of West (2002), which explains that creativity is interpreted most often as a pre requisite or condition for innovation.

Pantaleão and Pinheiro (2009) point to interaction between creativity and innovation to mention the point of view of Kneller (1971), in the sense that all creativity definitions shall include the innovation concept. Such authors include, in the article, creativity from rather subjective elements such as intuition and chance, on the assumption that these two aspects have an equivalent nature, linking them to the innovation process within design. As the

idea generation, they expose the intuition use as an option to enlarge a range of data and relations in the creation process.

According to Bruno Faria (2007) creativity in the workplace presents its importance at the moment, that makes it possible to produce innovation, which results in gains for the organization and society. This study, the innovative process is understood as a materialization of the creative idea.

Bruno Faria et al. (2008) focuses in his article the creativity within organizations as an able process to create innovation. Also highlighted the affinity between creativity and innovation to present a creativity concept developed by Bruno-Faria (2003) that exposes implicitly this phenomenon as favoring innovation, emphasizing the idea that what is produced should be subject to implementation and not just contain some character of novelty and value.

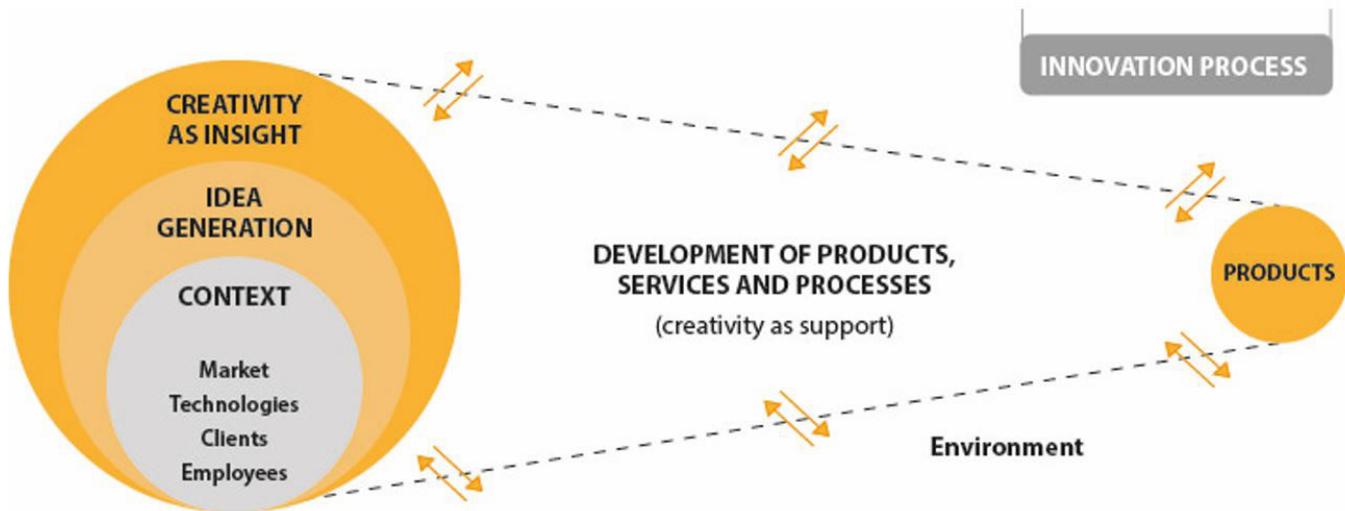
The article of Isidro Filho and Guimarães (2010) mentions an association between innovation concept and creativity. They consider and included in this first level of innovation process, similar to Amabile et al. (1996) and Gurteen (1998).

Through this study, it was realized that 23,69% of the articles refer to the interrelationship between creativity and innovation. It was found, in most of the journals, the presentation of superficial comments on the link between these issues and the mention of innovation generalized way, without specifying the innovative process within the product.

The articles that were presenting creative approaches with focus on the product corresponded to 15,78% of the respondents, whose contents didn't include the association between creativity and innovation, but alluded to use creativity in product development. Half the fonts included in this percentage used the term "innovation" associated with the product development process.

The relationship between creativity and product innovation is perceptible when one understands the importance of the creative process to generate new ideas that contribute to the creation of innovative products.

In view of these considerations, it is suggested Figure 1 as an integrative model of the terms presented in this topic. Through this is understood that for the generation of ideas, the context and creativity used as insight are essential



**Figure 1.** Integrative Model of Relationship between Products creativity and Innovation.

factors, and the wider context of market needs, technologies, customers, and even the organization's own employees. During the process of product development, creativity is also required as regards problem solving that arises during the process. The group creativity will help the team identify, deal with and overcome existing barriers. The entire process, the ideas to finalize the product, is regarded as the innovation process.

## 5. Conclusions

The study research has shown that creativity and innovation are important variables in the current scenario, essential elements in sustainability of an organization that aims to keep competitiveness, creating and adding value to their products in face of the competition. It also, stresses the role these elements in the development of personal and professional skills, which contribute to better competitiveness in constantly changing environments.

The recommendations raised for the development of creative potential in people, found in several authors, were listed as factors inhibitors and stimulators, bringing direct recommendations on the best practices that companies should follow to promote the development of its human resources.

Also noteworthy is that, like creativity, innovation is a branch of knowledge that has distinct and broad conceptions, which hinders the direction for a set way of thinking such issues. Thus, further studies in these areas allow better visualization of the approaches taken to these subjects and their integration in order to build a more structured thinking that contributes to subsequent uses.

The proposed integrative model of creativity and product innovation, obtained from the analysis of the systematic literature review, shows the understanding of the relation between the two subjects, showing that both

are complementary, interdependent and can be addressed in several areas, such as Product Engineering or research and development of business, in an integrated manner.

For further studies suggest to applied research by the method action research about the relation between creativity and innovation in products analyzing companies of industrial sectors, services and public organizations.

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