



Ideas for innovation: a systematic mapping of the literature

Ideias para a inovação: um mapeamento sistemático da literatura

Pierry Teza^{1,2}
Viviane Brandão Miguez³
Roberto Fabiano Fernandes²
Gertrudes Aparecida Dandolini²
João Artur de Souza²

Abstract: This paper attempts to map the specific literature in order to seek better understanding of the current situation on research related to ideas for innovation, enabling to identify how authors treat the activity of managing ideas in the innovation process. In this sense, we adopted a methodological procedure, held from a systematic search, to review the literature on the subject - ideas in the context of innovation. We used the Scopus, Engineering Village, Web of Science and EBSCO databases. As a result, we obtained a corpus of 241 publications, in which we initially identified key articles, authors, countries, and journals that have published more on the subject, and the most frequently used keywords. Subsequently, based on the analysis of these articles, it was possible to perform a taxonomic classification for sort them according to their main focus of research. The taxonomy used consists of management models of ideas; generation and enrichment of ideas; sources of ideas; evaluation and selection of ideas; storage of ideas; sharing of ideas; computational tools for the management of ideas; factors of influence on the management of ideas.

Keywords: Innovation; Front end of innovation; Innovation ideas.

Resumo: O presente artigo realiza um mapeamento da literatura com o propósito de buscar melhor entendimento do cenário atual sobre as pesquisas relacionadas a ideias para inovação, viabilizando identificar como os autores tratam a atividade de gerenciar ideias no processo de inovação. Nesse sentido, foi adotado como procedimento metodológico a revisão da literatura sobre o tema - ideias no contexto da inovação -, realizada a partir de uma busca sistemática. Utilizaram-se as bases de dados Scopus, Engineering Village, Web of Science e EBSCO. Como resultado, obteve-se um corpus de 241 publicações, das quais inicialmente se identificaram os principais artigos, autores, países e periódicos que mais publicaram sobre o assunto e as palavras-chave mais utilizadas. Posteriormente, a partir da análise dos artigos, possibilitou-se o desenvolvimento de uma taxonomia para a classificação desses artigos segundo o foco principal de pesquisa. A taxonomia utilizada é composta por: modelos de gestão de ideias; geração e enriquecimento de ideias; fontes de ideias; avaliação e seleção de ideias; armazenamento de ideias; compartilhamento de ideias; ferramentas computacionais para a gestão de ideias; fatores de influência sobre a gestão de ideias.

Palavras-chave: Inovação; Front end da inovação; Ideias para inovação.

¹ Grupo de Estudos e Pesquisas em Empreendedorismo e Inovação – GEPEI, Instituto Federal de Santa Catarina – IFSC, Câmpus Caçador, Av. Fahdo Thomé, 3000, Champagnat, CEP 89500-000, Caçador, SC, Brasil, e-mail: pierry.teza@gmail.com

² Grupo de Pesquisa Inteligência, Gestão e Tecnologias para Inovação – IGTI, Programa de Pós-graduação em Engenharia e Gestão do Conhecimento – PPEGC, Universidade Federal de Santa Catarina – UFSC, Câmpus Universitário Reitor João David Ferreira Lima, Trindade, CEP 88040-970, Florianópolis, SC, Brasil, e-mail: robertofabiano.fernandes@gmail.com; ggtude@gmail.com; jartur@gmail.com

³ Programa de Pós-graduação em Engenharia de Produção – PPGE, Universidade Federal de Santa Catarina – UFSC, Câmpus Universitário Reitor João David Ferreira Lima, Trindade, CEP 88040-970, Florianópolis, SC, Brasil, e-mail: vivianemiguez@gmail.com

1 Introduction

Given the current business environment, organizations need to innovate in response to customer demands and lifestyles in order to seize the opportunities offered by technology and ever-changing markets (Baregheh et al., 2009). In addition, organizations are under an increasing competitive pressure to maintain their market share, increase product range, improve efficiency and reduce costs, and innovation is the process that can make them achieve these improvements (Flynn et al., 2003). In other words, constant environmental demands and changes require constant adaptation of organizations through innovation, which can be performed on products, services, operations, processes and people (Baregheh et al., 2009). These authors also claim that “[...] innovation is the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace [...]” (Baregheh et al., 2009, p. 1334). The innovation process is divided into several steps or sub processes. Literature usually separates it into three phases: front end innovation (early stage), development and commercialization (Koen et al., 2001).

For organizations, innovation is a key process to achieve sustained competitiveness (Björk et al., 2010). The importance of innovation may be compared with the importance given to quality in the late 60’s (Gibson & Skarzynski, 2008). Thus, the successful management of innovation involves coordinating a portfolio of innovation development projects in a clear outline, guided by the overall strategy of the business (Flynn et al., 2003). Along these lines, the organization’s ability to generate and develop ideas, create new options and opportunities for their own future, and effectively explore them in the business system (Björk et al., 2010; Flynn et al., 2003) is vital to the success of the innovation process. Similarly, the generation of ideas is identified as one of the most important and critical activities of innovation (Roberts & Fusfeld, 1981) and at the same time is recognized as a vital part of the innovation front end (Koen & Kohli, 1998).

Considering the relevance of the topic for organizations in today’s competitive context, this paper aims to map researches related to ideas and their management, available on the following databases: Scopus, Web of Knowledge, EBSCO and Engineering Village. Additionally to searching papers on these databases, a bibliometric analysis was made in order to examine behavior patterns on the researches found, as well as the classification of studies according to their focuses.

This study is structured as follows: Introduction presents the basic concepts relevant to the topic of ideas in the innovation process. The next section is

the theoretical base, where we present the guiding concepts about ideas and their management. Then, we detail the method used in data survey. Subsequently, we explain the bibliometric analysis, describing the data collection, categorization and mapping of literature indicating the approaches of research on the topic; and finally, closing remarks are made.

2 Theoretical base

Over the years several studies have focused on the innovation process, especially on ways to improve it as a whole. There are researches ranging from the Schumpeterian theory linked to the innovative businessman, to the neo-Schumpeterian theories of the authors Richard Nelson, Sidney Winter, Giovanni Dosi, Edith Penrose and Christopher Freeman, among others, who consider innovation the only way to survive in the market of products and processes. There are also studies concentrated on the development of new products, focusing on assets. Later, researches with a closer look at other types of innovation appeared. Many of these studies follow the chronological and conceptual evolution of Rothwell (1994), which Tidd et al. (2008) call “innovative journey”, consisting of important stages, dependent on a number of circumstances where specific new models of the innovation process appear. Considering that the literature about product development has been transposed to the area of innovation, joining studies about other outcomes of the process, it is understood here that the process of development of new products and the innovation process are similar, considering their main difference the fact that the innovation process may have multiple types of outputs.

A major change in the way to observe the innovation process was proposed by Smith and Reinertsen in 1991 (still focusing on product development – goods), who emphasized the initial stage of the project, i.e., the activities and period of time until the development of a product concept. Authors called this stage, considered here a sub process, “fuzzy front end” (FFE). The term “fuzzy” (diffuse) was used because this sub process involve inaccurate processes and ad hoc decisions (Montoya-Weiss & O’Driscoll, 2000); in other words, it is “[...] often chaotic, unpredictable, and unstructured [...]” (Murphy & Kumar, 1997, p 32). Thus, based on the proposal of Smith & Reinertsen (1991) the development process of new products can be divided into three sub processes: 1) fuzzy front end; 2) development of new products; 3) commercialization. In this paper we adopted the termination proposed by Koen et al. (2001), front end innovation (FEI), since they claim that the use of the word “fuzzy” may lead to the understanding that this sub process is mysterious, therefore impossible to manage. It should also be observed, regarding the terminology, that before the contribution of Smith

& Reinertsen (1991), this sub process was already being studied (for example Cooper, 1988).

Starting from the fact that the innovation process may result in different types of outcomes (products – goods and services, processes, marketing methods and organizational methods), the term “development” will be used here for the product development sub process, and the term “implementation” will be used for the commercialization sub process, since an innovation in the process for example is not always commercialized.

In this context, the innovation process is divided into: front end innovation; development; application. The front end innovation (FEI) is one of the weakest sub processes, but it fundamentally determines the subsequent success of innovation (Koen et al., 2001). In FEI ideas and opportunities are interconnected, since recognizing or creating an opportunity is the moment to generate or to test an idea; moreover, an idea may lead to an opportunity, or might be required to seize an opportunity (Vandenbosch et al., 2006; Koen et al, 2001). Based on results of empirical studies and logical arguments for reducing FEI uncertainty, organizations must invest in intellectual resources in this part of the innovation process (Boeddrich, 2004), since any improvement in this sub process tends to represent substantial improvements in the final result of innovation (Koen et al., 2001).

In order to achieve a maximum number of innovative product ideas and processes, a holistic view of the innovation process is required (Brem & Voigt, 2007). Despite the importance of ideas for the innovation process, with a few exceptions, it was only in recent decades that companies explicitly dealt with ways to encourage the production of ideas (Björk et al., 2010). Companies should not only be concerned with the identification of ideas, but should also have an active role in stimulating the generation and explicit formulation of ideas, i.e. in the idea management process (Björk et al., 2010). Here, idea management is considered the process through which organizations identify the need, generate (by creation or capture), improve, share, store, evaluate and select ideas in the context of innovation.

3 Methodological procedures

Bibliometrics is the study of quantitative aspects of production, dissemination and use of registered information (Macias-Chapula, 1998). According Spinak (1996) bibliometrics studies the organization from scientific and technological sectors, based on literature sources and patents to identify actors, their relationships, growth and trends of knowledge in an area.

The methodological procedures adopted in this paper are similar and relate to procedures adopted by previous works, such as Greenhalgh et al. (2004) and

Kalluri & Kodali (2014). Greenhalgh et al. (2004) conducted a systematic review in order to discuss the specific content of diffusion of innovation and provide a systematic and reproducible process for literature review. Kalluri & Kodali (2014) present a systematic review and the analysis of existing papers about new product development (NPD) published on a 12 year period, between 1998 and 2009. On the other hand, in this study we decided to do a bibliometric review as a way to capture an overview of the research related to ideas in the context of innovation. Thus, besides the systematic literature review, we did a bibliometric review of surveyed data in order to identify main authors, countries, sources of publication and the most cited publications. In addition, the publications were mapped with the purpose of identifying different approaches to research, based on the taxonomy that emerged from the analysis of papers. This study was conducted in seven distinct steps: identification of keywords; searches in databases; export to the EndNote® software; filtering of publications; inclusion of relevant publications to the portfolio; standardization; bibliometric analysis; categorization of publications; synthesis of categories.

Identification of keywords: aimed to identify which keywords have been used by authors when dealing with the subject. To this, an exploratory search was done on Scopus database with the terms “innovation” and “idea”, which returned the following keywords to be searched in the four databases, combined one by one with the term “innovation”: basic idea; creative ideas; idea generation; idea generations; idea management; idea selection; idea screening; ideas; ideation; ideas generation; innovative ideas; new ideas.

Searches in databases and export to EndNote®: regarding the choice of databases, the following ones were selected: Scopus; Web of Knowledge; EBSCO; and Engineering Village. The selection criteria were: being from the business management area, being recognized for the quality of stored publications, and also enabling a larger range of research. We used the EndNote® software, which allowed the researchers to perform some functions of the bibliometric research as well as to use the parameter adjustment available on each database (since these have different formats).

Filtering of publications: with the help of EndNote® software it was possible: to eliminate duplicated publications between databases; to identify papers that were not relevant to the research; to perform the download of papers. This

process was conducted by three researchers who read the titles and abstracts of each publication, and occasionally the full paper.

Standardization: the standardization of information was performed according to the following criteria: matching names of authors and journals; eliminating inconsistencies due to error or lack of register in databases, such as an incorrect name of a journal or author.

Inclusion of relevant publications to the portfolio: the references from the portfolio of available papers were analyzed in search of other relevant papers. These papers were then added to the final portfolio, creating the analysis portfolio.

Bibliometric analysis: after building and standardizing the analysis portfolio, the bibliometric analysis became feasible with queries and frequency count, i.e., the number of publications per year, number of papers published by journal, authors and co-authors and their countries, number of publications per author and keywords.

Categorization and synthesis of publications: after reading titles and abstracts, and when necessary the full document, papers were grouped according to their main theme. Thus, a taxonomy was created in order to assist other researchers looking for publications, as well as to help understanding the main approaches used in the publications regarding ideas and their management in the context of innovation.

4 Results from systematic survey

To form the analysis portfolio, i.e. the selection of papers relevant to the study, the definition of the various exclusion and filtering criteria described in the methodological procedures was required. It started from an amount of 870 publications, distributed as follows: Web of Knowledge (173); Scopus (432); EBSCO (220); Engineering Village (45). After reading their titles and summaries, and occasionally the full paper, the number of publications reduced to 213, but only 139 were obtained in full. Researchers then checked the references of these 139 papers, looking for other relevant papers with full text available. With this strategy 28 other papers related to the topic were identified, from which only 21 were available in full. These 28 items were added to the 213 previous papers, thus resulting in 241 publications that formed the analysis portfolio. However, it is noteworthy that only 160 items were available in full, which can be justified by the restrictions of the research agreement between the Federal University of Santa Catarina, CAPES (public research agency under Brazilian Ministry of Education) and the databases used. The fact that not all of the papers from the analysis portfolio were available in full is considered a limitation of this study. However, it should be taken into account that the summary of the paper is usually developed by the authors, meaning they contain the work and ideas from these authors.

5 Bibliometric analysis

This section aims to present the results of the bibliometric analysis of the selected papers, the analysis portfolio (241 papers).

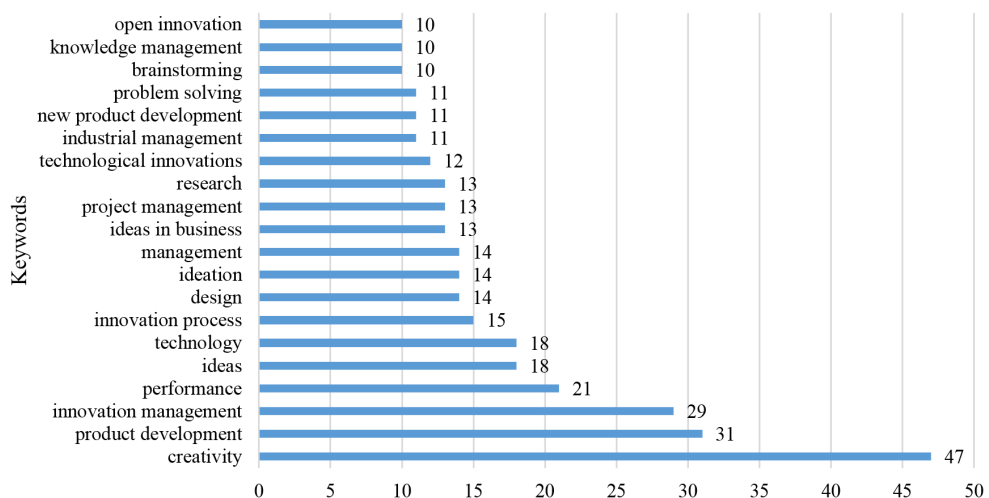


Figure 1. Frequency chart of the 20 most recurrent keywords (n = 1198). Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

5.1 Bibliometric data

Five hundred authors (including co-authors) from 31 countries were responsible for the 241 papers that form the analysis portfolio. The papers were published in 138 journals and 1,198 different keywords were used. In addition to these numbers, the following relationships were established: most frequent keywords; number of publications per year; number of publications by author; number of publications by journal.

Figure 1 shows the keywords with ten or more repetitions in the studies from the analysis portfolio. The terms “innovation” and “idea generation” were used in all searches, therefore they appear as the most frequent keywords (120 and 60 repetitions, respectively) and were removed from the chart for being search words.

The terms “creativity” and “innovation management” stand out as very frequent keywords

— 47 and 31 mentions, respectively. This illustrates the importance of managing innovation and creativity and techniques in the context of idea generation. Not only generating ideas, the organization must manage the process that starts with ideas and ends in actual innovation.

Regarding the number of publications over the years, an irregularity appears in the amount of publications, as shown in Figure 2. No explanation was found for publication peaks in some years (2002, 2006 and 2010) and decrease in others (2003 and 2005). But in general, an increase in the number of publications can be seen in the last seven years (from 2006). The reduced number of papers in 2012 is explained by the fact that this survey was conducted in late 2011, when some 2012 papers had already been registered in databases.

Concerning the authors who have more publications on the topic, Figure 3 shows that 15 of them have

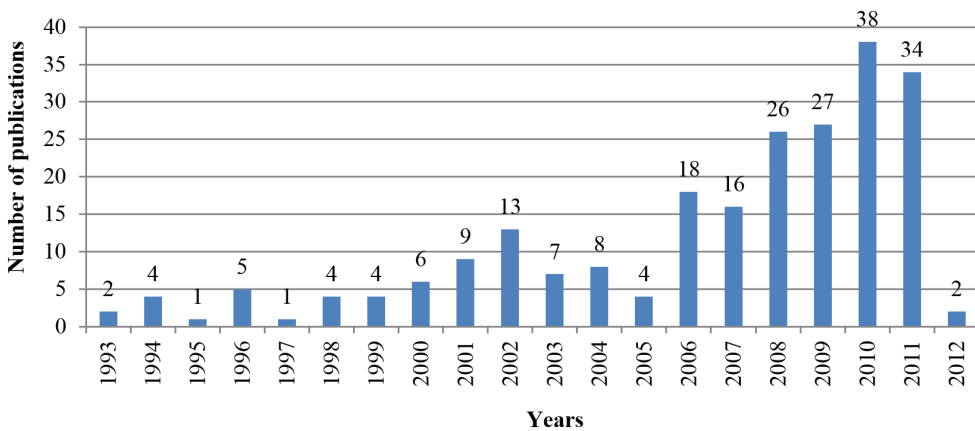


Figure 2. Number of publications per year. Note: n = 241; data from the last 20 years. Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

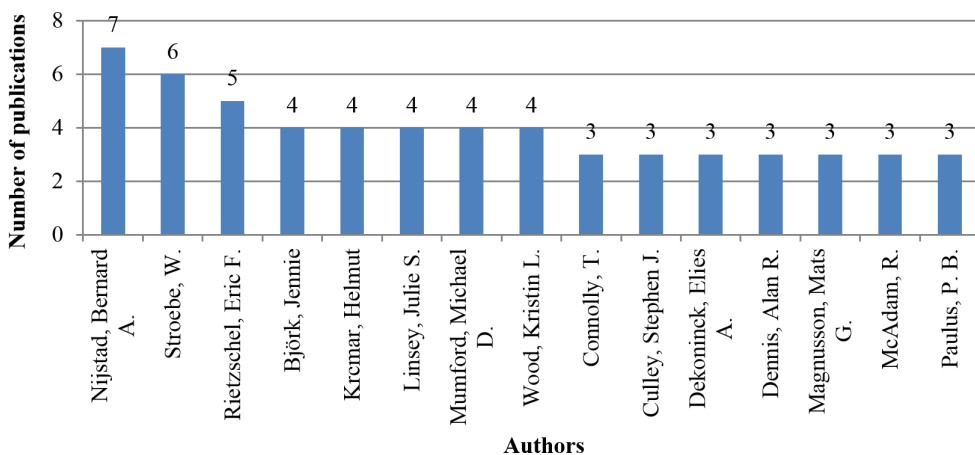


Figure 3. Amount of publications from the fifteen authors who most published on the theme. Note: n = 241; publications limited to three. Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

three or more publications in the portfolio. Authors B.A. Nijstad and W. Stroebe stand out with seven and six publications respectively. These two authors are Dutch, work in the field of psychology and have published together focusing on cognitive aspects of the sharing process of ideas, in the context of a group.

Observing the work of authors presented in Figure 3 there are 41 items, where the 15 authors who most published are responsible for 17% of the analysis portfolio. It was also found that many authors represented on the chart publish together, for example: E. F. Rietzschel, B. A. Nijstad and W. Stroebe (Nijstad et al., 2002; Nijstad & Stroebe, 2006; Rietzschel et al., 2006, 2009, 2010); J. Björk and M. G. Magnusson (Björk & Magnusson,

2009; Björk et al., 2010; 2011); and J. S. Linsey and K. L. Wood (Hey et al., 2008; Linsey et al., 2008; Linsey et al., 2011).

Surveying the journals that most published on the subject, as can be seen in Figure 4, the highlights were the International Journal of Technology Management and Management Science with 11 and 10 publications respectively. Moreover, from the 138 journals found, the 13 (9.42%) that most published did it for approximately 33% of the publications.

The United States is the country which most published on the subject, adding up to 100 papers, followed by Germany (28), United Kingdom (12), Sweden (12), Canada (11), Netherlands (11) and other countries with less than ten publications.



Figure 4. Amount of publications by journal. Note: n = 241; publications limited to four. Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

Chart 1. Thirty most cited papers on Scopus (SC) and Web of Knowledge (WK) databases.

Publications	SC	WK	Publications	SC	WK
Connolly et al. (1990)	ADB	250	Goldenberg et al. (2001)	73	71
Sutton & Hargadon (1996)	215	203	Cooper et al. (2002)	63	38
Diehl & Stroebe (1991)	193	0	O'Connor & Rice (2001).	56	40
Valacich et al. (1994)	163	155	Blau and Mckinley (1979)	ADB	55
Gans & Stern (2003)	149	127	Sosik et al. (1998)	55	47
Paulus & Yang (2000)	139	127	Masseti (1996)	52	46
Lilien et al. (2002)	137	118	Nijstad et al. (2002)	51	47
Fern (1982)	ADB	108	MacCrimmon & Wagner (1994)	0	45
Jessup et al. (1990)	106	ADB	Sharma (1999)	43	23
Hargadon & Sutton (2000)	104	50	Goldenberg et al. (1999)	39	42
Morrison et al. (2000)	103	93	Ramus (2001)	42	33
Axtell et al. (2000)	102	89	Troy et al. (2001)	42	31
Paulus (2000)	102	92	Keegan & Turner (2002)	0	39
Piller & Walcher (2006)	87	58	Howell & Boies (2004)	36	22
Nijstad & Stroebe (2006)	76	61	Utterback (1971)	14	36
Dahl & Moreau (2002)	75	68			

ADB means absent on the database. Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

Among the most quoted papers on the databases, Chart 1 features the thirty most quoted in Scopus and Web of Knowledge.

The EBSCO and Engineering Village databases were not included because their system does not allow extracting citations automatically. The choice was made considering the highest number of citations in any of the bases.

5.2 Categorization of publications

From the analysis portfolio, 241 papers were examined in order to identify the main focus of each one. In this process nine categories emerged, namely (the numbers in brackets represent the frequency of papers in the categories): influence factors (86); sources of ideas (57); techniques for ideas generation (29); idea management process (22); computer tools (17); evaluation/selection of ideas (17); ideas database (4); dissemination of ideas (5); and result of the idea management process (4).

All publications were classified into only one of these categories, although some studies deal with more than one; in these cases, researchers conducted the classification under the prevailing theme (the main focus of the study).

5.3 Discussion on the approaches found in literature

Each of the identified approaches is explained below with the help of the research presented by papers from the analysis portfolio. They are presented in descending sequence of the number of papers in each category.

5.3.1 Factors of influence on idea management

This category includes the publications which present factors that influence the management of ideas. Specific emphases were identified during the analysis of the papers, meaning some of them studied more deeply one factor of influence (Chart 2), namely: organizational environment; anonymity; creativity; leadership; market and technology; opportunities; individual profile; and geographic region.

Regarding the organizational environment, Rosa et al. (2008), based on case studies in three companies, establish four management principles of that generate creativity and innovation in organizations: managing the organization so that the basic knowledge is more diverse than would normally occur; encouraging employees to adopt a cooperative attitude; making it possible for members of the organization to

Chart 2. Papers focusing mainly on factors of influence on idea management.

FACTORS OF INFLUENCE	
Number of papers in this category: 86	
Organizational environment (9): Erickson & Jacoby (2003); Gans & Stern (2003); Hage & Hollingsworth (2000); Mainemelis (2010); Marx (1998); Nilsson et al. (2002); Rietzschel (2011); Rosa et al. (2008); Rubenstein (1994).	Anonymity (2): Connolly et al. (1990); Jessup et al. (1990).
Creativity (27): Basadur & Hausdorf (1996); Bechtoldt et al. (2010); Beckett (2010); Bengtson (1982); Berman & Kim (2010); Binnewies et al. (2007); Bresciani (2009); Burroughs et al. (2011); Collado-Ruiz & Ostad-Ahmad-Ghorabi (2010); Heye (2006); Karni & Shalev (2004); Manolache & Basu (2010); McAdam & McClelland (2002a); Nijstad & Stroebe (2006); Nov & Jones (2006); Ohly et al. (2010); Paulus (2000); Paulus & Brown (2007); Perez-Freije & Enkel (2007); Plucker et al. (2006); Rietzschel & Janssen (2008); Rietzschel et al. (2010); Sankaran et al. (2008); Santanen et al. (2004); Tseng et al. (2008); Ugalde-Albistegui & Zurbano-Bolinaga (2009); Wierenga & Van Bruggen (1998).	
Leadership (9): Aronson et al. (2008); Chua et al. (2010); De Jong & Den Hartog (2007); Eisenbeiss et al. (2008); Krause (2004); Krause (2005); Sosik (1997); Sosik et al. (1998); Vandenbosch et al. (2006).	Market and technology (2): Brem & Voigt (2009); Cotterman et al. (2009). Opportunities (2): Cooper et al. (2002); Rochford (1991).
Individual profile (7): Axtell et al. (2000); Boeddrich (2004). Campos & Munoz (2009); Hunt & Gray (2007); Kobayashi et al. (2010); Mitchell et al. (2009); Munoz-Doyague et al. (2008).	Geographic region (3): Andersson & Johansson (2008); Cantù (2010); Waguespack & Birnir (2005).
Broad discussion - more than one factor of influence (23): Aramburu & Sáenz (2011); Artz et al. (2010); Björk & Magnusson (2009); Björk et al. (2011); Daniels et al. (2011); De Dreu et al. (2011); Garfield et al. (2001); Gordon et al. (2008); Howell & Boies (2004); Ibarra (1993); Kavadias & Sommer (2009); Keegan & Turner (2002); Kijkuit & van den Ende (2010); Klofsten (2005); Lovejoy & Sinha (2010); Mumford et al. (2001); Sebora & Theerapatvong (2010); Sharma (1999); Spanjol et al. (2011); Stanleigh (2008); Sundström & Zika-Viktorsson (2009); Toubia (2006); Troy et al. (2001).	

Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

participate in quick tests for their ideas and solutions when they emerge; rewarding behaviors that support these principles and punishing resistance to their implementation. It also emphasizes that the work of Marx (1998) prescribes characteristics for an idea management and innovation program focused on learning.

With regard to anonymity, Connolly et al. (1990) and Jessup et al. (1990) studied the effect of anonymity on the generation of ideas comparing anonymous working groups with identified groups. Connolly et al. (1990) focused on anonymity on the generation of ideas aided by computer. The authors concluded that anonymous groups produced more original solutions and made general comments on the ideas, but the average quality and rarity of the solutions were not different from identified working groups. Jessup et al. (1990) on the other hand verified that anonymous groups generated more comments on the ideas and were more critical, and were more likely to enrich ideas proposed by other members.

Regarding creativity, the papers highlight that groups' creativity has implications for the quality of problem solving and decision making. For this reason, organizations seek to improve creativity in the development process of a new product, offering incentive programs, creativity training programs, or both. However, creativity continues to be not well understood as a construct.

As for leadership, papers mention the influence of the leaders in employees' innovative behavior. These, in turn, can help improve business performance through their ability to generate ideas and build new and better products, services and work processes.

Regarding market and technology, the ability of an organization to identify, acquire and use (external) ideas can be seen as a critical factor to their market success.

On the issue of opportunity, authors say it is an initial process and that it is an important area for the market and industrial companies because of its main role in the new product development process.

Regarding the individual profile, the papers discuss the importance of encouraging innovation among collaborators.

When dealing with geographical regions, papers refer to studies that have shown that geographic proximity encourages the creation of relationships and that the intensity of interactions favors the transmission of ideas and information. These interrelationships within specific context and location stimulate economic growth and local innovation. Finally, there are papers dealing with more than one factor of influence. These were therefore considered as general papers.

5.3.2 Sources of ideas

This category comprises the papers which discuss sources of ideas for innovation (Chart 3). Two areas of study appear in this category: the one that brings users as sources of ideas and the other, which does the same for employees. In the first area, some studies highlight the role of idea contests or competitions, for example Hansen et al. (2011), Leimeister et al. (2009), Piller & Walcher (2006) and Zheng et al. (2011), Schepers et al. (1999), Morgan & Wang (2010), Ebner et al. (2009). Hansen et al. (2011) analyzed a case about idea contests and found that most of the ideas provided by users is related to incremental innovations. Leimeister et al. (2009), Morgan & Wang (2010) and Zheng et al. (2011) discuss ways to encourage user participation in contests. Ebner et al. (2009), in turn, discusses how information and communication technologies may support competitions of this nature. Also in relation to the works that focus on users as sources of ideas, Grunert et al. (2011) discuss the use of customer perception techniques,

Chart 3. Papers focusing mainly on sources of ideas.

SOURCES OF IDEAS
Number of papers in this category: 57
Collaborators (15): Bodell (2010); Das (2002); Santos & Spann (2011); Ettlie & Elsenbach (2007); Hargadon & Sutton (2000); Hartman et al. (1994); Leavy (2005); Madjar (2008); Ortlieb & Stein (2008); Ramus (2001); Richer et al. (2009); Singh & Agrawal (2011); Spencer & Woods (2010); Stevens (1996); Tollin (2008).
Competitors/other companies (4): Brolø (2009); Hsu et al. (2009); Alam (2003); Castiaux (2007).
Users (23): Blohm et al. (2011); Di Gangi & Wasko (2009); Di Gangi et al. (2010); Ebner et al. (2009); Grunert et al. (2011); Hansen et al. (2011); Isherwood (2008); Kim & Park (2010); Koen & Kohli (1998); Lee et al. (2001); Leimeister et al. (2009); Levickaite et al. (2011); Lilien et al. (2002); Magnusson (2009); Magnusson et al. (2010); Morgan & Wang (2010); Morrison et al. (2000); Mullins et al. (2008); Piller & Walcher (2006); Rexfelt et al. (2011); Schepers et al. (1999); Sorensen & Nicolajsen (2010); Vinodh et al. (2007). Witell et al. (2011); Zheng et al. (2011).
Broad discussion – more than one source of ideas (15): Ayuso et al. (2006); Baba et al. (2010); Bommer & Jalajas (2004); Bothos et al. (2012); Chen et al. (2011); Goldenberg et al. (1999); Hyland et al. (2006); Katila (2002); McAdam & McClelland (2002b); Muhdi et al. (2011); O'Connor & Rice (2001); Salter & Gann (2003); Utterback (1971); Woodhead & Berawi (2008); Konnola et al. (2007).

Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

and conclude that these techniques can: support the identification of market opportunities; ensure that the technologies employed are acceptable to customers; assist the selection; optimize new product concepts and test product prototypes before their final release.

Rexfelt et al. (2011) describe the results of a project that aimed to develop and apply methods of co-creation with users, focusing on the early stages of the development of new services. The authors conclude that a structured approach to co-creation is important, however, there is no recipe for innovation in services. The development of new services with the help of users has also been studied by Soresen & Nicolajsen (2010), discussing the involvement of users in the process.

Regarding the type of user who is a source of ideas for innovation, some studies indicate the use of leader users, for example, Lilien et al. (2002), Mullins et al. (2008), while others discuss the use of ordinary users, for example, Magnusson et al. (2010) and Morrison et al. (2000).

Studies focusing on employees recognize the importance of using their ideas. Santos & Spann (2011) present a method of promotion of corporate entrepreneurship in order to transform the creative thinking of employees into valuable products. Hartman et al. (1994) in turn studied the sources of ideas used by employees. The authors concluded that all employees are somehow linked to innovation activities.

Prescriptively, Leavy (2005) states that innovative companies share at least four factors that are critical for success: to include people and ideas at the heart of management philosophy; to give people room to grow, to experience things and learn from their mistakes; to build a strong sense of openness, community and trust throughout the organization; to facilitate internal mobility of talents.

Some studies focus on the competitors as sources of ideas, although with less recurrence compared to users and employees. Brolo (2009), with emphasis at the beginning of the innovation process, studies the cooperative relationship between financial companies

and concludes that cooperation among competitors may be an advantage at the ideas generation phase, since the inclusion in a network provides confidence, a normal understanding of basic conditions and a broader base of common knowledge. The author also points out that the differentiation between companies will still exist due to specific resources and business models. The advantage of cooperation is also identified by Alam (2003), who points out that benefits arise not only in the generation of ideas but in the whole process. Hsu et al. (2009) propose a process that aims to integrate the patent information from competitors, without causing legal violations.

Other studies in this category present a broader relationship between the sources of ideas. Papers which attempt to compare the importance of different sources of ideas for companies are noteworthy. Bommer & Jalajas (2004) studied, through the experience of R&D professionals, the importance of sources of ideas for small and medium enterprises. Chen et al. (2011) studied the factors influencing the choice of the sources of ideas. Researching information and communication technology companies, Hyland et al. (2006) checked the sources used by these companies and concluded that they are not the same, yet the sales force, customers and suppliers are considered by these companies important sources of ideas.

5.3.3 Techniques for idea generation

Studies dealing with techniques for generation and/or improvement of ideas were included in this category (Chart 4). Most papers focuses on verification of the quality and /or quantity of ideas generated with certain technique.

Chan et al. (2011), Linsey & Viswanathan (2010) and Linsey et al. (2008) evaluate through experiments the use of analogies to generate ideas. Nijstad et al. (2002) and Paulus & Yang (2000), with an approach focused on the improvement of ideas, verify the increase of ideas when these are shared, while also addressing the necessary conditions for this. Diehl & Stroeb (1991), Sutton & Hargadon (1996),

Chart 4. Papers focusing mainly on the generation and improvement of ideas.

TECHNIQUES FOR IDEA GENERATION
Number of papers in this category: 29
Use of analogies (3): Chan et al. (2011); Linsey et al. (2008); Linsey et al. (2011).
Improvement of ideas with sharing (2): Nijstad et al. (2002); Paulus & Yang (2000).
Brainstorming (4): Diehl & Stroeb (1991); Sutton & Hargadon (1996); Howard et al. (2011); Valacich et al. (1994).
Generation of isolated ideas, to be grouped later (20): Briggs & Reinig (2010); Chou (2010); Dahl & Moreau (2002); Dhillon (2006); Duran-Novoa et al. (2011); Elfvengren et al. (2009a); Ellspermann et al. (2007); Fern (1982); Gautam (2001); Heslin (2009); Hey et al. (2008); Howard et al. (2010); Jones et al. (2001); Knoll & Horton (2011); Linsey & Viswanathan (2010); Tan et al. (2008a); Tan et al. (2008b); Wilson et al. (2010); Yang & Chen (2012); Zeng et al. (2011).

Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

Howard et al. (2010) and Valacich et al. (1994) discuss the technique which is perhaps the most mentioned technique for generating and improving ideas: the brainstorming. Overall, studies show that a greater effectiveness in generating ideas is achieved when they are generated separately and combined at a later stage. In addition, Valacich et al. (1994) verify that the use of a computational tool can further improve the idea management process.

5.3.4 Idea management processes

Works in this category seek to study the idea management process or part of it (Chart 5), which feature papers focused on: idea management models, computational tools to support the process, ideation capacity (generation ideas), tacit and explicit knowledge, and idea management process.

Papers such as Brem & Voigt (2007), Flynn et al. (2003), and Sandström & Björk (2010) and Kurkkio et al. (2011) propose models. Brem & Voigt (2007) address the issue of integrating external stakeholders to the process. Flynn et al. (2003) present an idea management process supported by a computational tool. Kurkkio et al. (2011), with a front end innovation approach, do a case study focusing on the development of new processes. Sandström & Björk (2010) in turn discuss the development of an

idea management system which works with continuous and discontinuous innovation ideas.

Other studies discuss the aspects related to the idea management process, without necessarily addressing a specific model. Based on the concept of ideation capabilities as managerial and organizational processes for stimulation, identification, selection and implementation of ideas, Björk et al. (2010) study four Swedish companies with a focus on the ideation approach used by them. The authors found out that different approaches are used, and pointed out the difficulties encountered by companies with respect to: the degree of formalization of the process; the extent of involvement of employees; and the degree of deliberate pursuit of ideas. On the other hand Gabberty & Thomas (2007) study the evolution of ideas from concept to reality and suggest areas for further research between tacit and explicit knowledge.

5.3.5 Computational tools for idea management

The study of computational tools for the generation/management of ideas is the main focus of the papers grouped into this category (Chart 6), where were identified works with emphasis on: state of the art on software, computational tools for generating

Chart 5. Papers focusing mainly on idea management processes.

PROCESS
Number of papers in this category: 22
Models (3): Brem & Voigt (2007); Sandström & Björk (2010); Kurkkio et al. (2011).
Computational tool support (1): Flynn et al. (2003).
Ideation capacities (1): Björk et al. (2010).
Tacit and explicit knowledge (1): Gabberty & Thomas (2007).
Idea management process (16): Borjesson et al. (2006); Conway & McGuinness (1986); Cooper & Edgett (2008); Elfvingren et al. (2009b); Flint (2002); Fornasiero & Sorlini (2010); Geschka et al. (2002); Hellström & Hellström (2002); Legardeur et al. (2010); Linton & Walsh (2008); McGuinness (1990); Pialot et al. (2011); Polverini et al. (2011); Schulze & Hoegl (2008); Sorli et al. (2006); Verworn (2006).

Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

Chart 6. Papers focusing mainly on computational tools for idea management.

COMPUTATIONAL TOOLS
Number of papers in this category: 17
State of the art on available software (9): Husig & Kohn (2009); Kohn & Husig (2006); Awazu et al. (2009); Bocken et al. (2011); Čančer & Mulej (2006); Deloule et al. (2004); Hesmer et al. (2011); Maccrimmon & Wagner (1994); Masetti (1996); Siau (1996).
Tools for idea generation (4): Westerski et al. (2011); Ardaiz-Villanueva et al. (2011); Bothos et al. (2009); Fairbank et al. (2003).
Tools for electronic brainstorm (1): Nagasundaram & Dennis (1993).
Wikis (1): Standing & Kiniti (2011).
Ontology (1): Riedl et al. (2009).

Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

ideas, tools for electronic brainstorming, wikis and ontology.

Khon & Husig (2006) study the adoption of innovation-supporting software by small and medium enterprises. Later, Husig & Kohn (2009) describe the state of the art concerning the software available, at the time, to support the innovation process.

Papers by Westerski et al. (2011), Ardaiz-Villanueva et al. (2011), Bothos et al. (2009) and Fairbank et al. (2003) present tools for idea generation. Nagasundaram & Dennis (1993) follow the same research line, but with a focus on electronic brainstorming. Standing & Kiniti (2011) studied the use of wikis in the innovation process, including during the generation of ideas. Riedl et al. (2009), based on the need for exchange and analysis of ideas between different tools, present an ontology providing a common language to promote interoperability between tools.

5.3.6 Evaluation and selection of ideas

Papers which emphasize the evaluation and/or selection of ideas are grouped into this category (Chart 7).

Dailey & Mumford (2006) evaluated how people calculate necessary resources and evaluate the consequences of ideas. The authors found that people were more accurate in calculating resources and evaluating consequences in conditions likely to generate implementation intentions; however, they overestimated the results and underestimated the resources when they had some familiarity with the issue.

Studies by Ferioli et al. (2010), Licuanan et al. (2007) and Lonergan et al. (2004) comprise the process of evaluating ideas. Ferioli et al. (2010) analyzes the evaluation activity of the creative idea

in the early stages of the New Product Development process (NPD). Among findings, the authors found that long sections of idea evaluation may cause loss or deletion of good ideas. Licuanan et al. (2007) focus on the evaluation of the originality of ideas, while Lonergan et al. (2004) examined the influence of the evaluation and revision of standards on creative problem solving. These authors conclude that the evaluation can be useful to correct deficiencies in ideas, but that the standards applied shall vary much according to the nature of the idea as to the context in which it will be implemented.

Rietzschel et al. (2006), based on the assumption that nominal groups outperform iterative groups in the generation of ideas, tested whether the productivity advantage of nominal groups would also result in a better idea selection. The authors concluded that there were no differences in quality between the selected ideas. In a more recent paper Rietzschel et al. (2009) point out that generating many creative ideas itself is not enough to reach the selection phase with good ideas, and instead, it is essential to apply appropriate selection criteria.

5.3.7 Bank of ideas

This category includes four papers dealing with the storage of ideas (Chart 8).

Papers by as Satzinger et al. (1999) and Cheung et al. (2008) study the effect that bank of ideas have on new ideas. Satzinger et al. (1999) found out that individuals tend to generate ideas that match the relationship paradigm of ideas given to them as a stimulus. As a complement, the work of Cheung et al. (2008), who studied knowledge repositories based on intranet, concluded that the reuse of the resulting knowledge of these repositories inhibit the creative performance of individuals.

Chart 7. Papers focusing mainly on evaluation and selection of ideas.

EVALUATION AND SELECTION OF IDEAS
Number of papers in this category: 17
Generally discuss evaluation and selection of ideas (11): Aas (2010); Baier et al. (2008); Fatur & Likar (2009); Girotra et al. (2010); Goldenberg et al. (2001); Hirschmann & Mueller (2011); Kerka et al. (2009); Nelson et al. (2009); Russell & Tippett (2008); Sowrey (1990); Toubia & Florès (2007).
Necessary resources (1): Dailey & Mumford (2006).
Idea evaluation process (3): Ferioli et al. (2010); Licuanan et al. (2007); Lonergan et al. (2004).
Nominal groups (1): Rietzschel et al. (2006).
Adequate selection criteria (1): Rietzschel et al. (2009).

Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

Chart 8. Papers focusing mainly on storage of ideas.

BANK OF IDEAS
Number of papers in this category
Baker et al. (1985); Cheung et al. (2008); Hill & Birkinshaw (2010); Satzinger et al. (1999).

Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

And on a different research line, Hill & Birkinshaw (2010) analyze the mind of the entrepreneur as bank of entrepreneurial ideas. The authors identify a number of dimensions to ideas, assuming that someone’s set of ideas may be compared to another person’s, concerning: content; volume; stage of development; logic value; and novelty.

5.3.8 Dissemination of ideas

This category lists the papers that deal with the dissemination of ideas in a given environment (Chart 9).

The work of Baccara & Razin (2007) deals with the dissemination of new ideas among the agents who participate in a given negotiation, focusing on the relationship between companies and information leakage.

Papers by Brahmhatt & Hu (2010) and McAdam et al. (2006) deal with the aggregation of market information in the early stages of innovation, enabling improvement of the innovation process. Brahmhatt & Hu (2010) concluded that the number and quality of ideas supplied decrease with the reduction of the level of restrictions on the market. McAdam et al. (2006) argue that new knowledge generated will be put through invisible filters within organizations and that these filters can deny naive assumptions about the acceptance of new technology and market knowledge.

Seshadri and Shapira’s paper (Seshadri & Shapira, 2003) discusses the effects of different organizational structures on the flow of ideas and the possibility of combining proposals in organizations, also discussing implications for organizational design. Silveira & Wright (2010), in turn, study a market where generators of ideas can sell them to businessmen who could implement them.

5.3.9 Outcome of the idea management process

Chart 9. Papers focusing mainly on dissemination of ideas

DISSEMINATION OF IDEAS Number of papers in this category: 5
Baccara & Razin (2007); Brahmhatt & Hu (2010); McAdam et al. (2006); Seshadri & Shapira (2003); Silveira & Wright (2010).

Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

Chart 10. Papers focusing mainly the outcome of the Idea management process.

OUTCOME OF THE IDEA MANAGEMENT PROCESS Number of papers in this category: 4
Generally discuss the outcomes of the idea management process in order to foster the next activity (concept development): Backman et al. (2007); Blau & McKinley (1979); Buggie (1995); Kornish & Ulrich (2011).

Source: Databases Scopus (2011), Web of Knowledge (2011), EBSCO (2011) and Engineering Village (2011).

This category includes the analysis of papers that deal with the outcomes of the idea management process (Chart 10).

Kornish & Ulrich (2011) have studied the effectiveness of parallel efforts to the generation of ideas. They found through the study of a set of data that: although there is redundancy of ideas due to parallel efforts, it is small; and ideas which have a redundancy tend to be most valuable. The authors also propose a method to extrapolate the number of original ideas that would result from a limitless effort for an unlimited number of generators of comparable ideas.

Buggie (1995) in turn discusses the use of ideas from external experts for generating new concepts. The author concludes that in order to generate new concepts companies must establish improvement criteria, set minimum productivity goals and identify sub products, adapt to new ideas and to put the plan into action by applying the necessary resources.

Backman et al. (2007) studied the concept of new products as a result of ideas. The authors concluded that there is a greater need for research to better understand the product concept phase. The works from Blau & McKinley (1979) and Kornish & Ulrich (2011) follow a similar path, since they studied the impact of ideas on organizational results.

6 Discussion, limitations and future studies

The purpose of this paper was to map the publications related to ideas in the context of innovation, in order to identify how studies have been addressing the issue. Based on 241 papers obtained from four databases, main authors on the subject were identified (B.A. Nijstad and W. Stroebe, both Dutch); the most frequently used keywords, besides those used in the research, were “creativity” and “innovation management”; International Journal of Technology Management and Management Science were the journals that published the most; and the most cited

papers were respectively Connolly et al. (1990) and Sutton & Hargadon (1996). In addition, an increase in the number of publications has appeared which may display an increased interest in the subject, even considering the increase in publications over the years which is normal in academia.

241 papers were further clustered according to the main theme, which resulted in nine categories, namely: factors of influence (86 papers); source of ideas (57); techniques to idea generation (29); idea management process (22); computational tools (17); evaluation/selection of ideas (17); bank of ideas (4); dissemination of ideas (5); and outcome of the idea management process (4). This portfolio showed that there is a considerable range of publications in the context of factors of influence and sources of ideas, which refer more to the beginning of the idea management process, than in comparison to the ideas bank, a result from the idea management process and idea dissemination categories - which concern the end of this process. Therefore, there is a clear need for more research in these latter categories.

This study presents the growth of research on ideas for innovation over the years (from 1993 to late 2011). The use of systematic techniques of search and selection of papers helped to build a portfolio of papers that enabled their analysis and categorization. Research on the subject has progressed on these terms.

However, it is also known that the portfolio selected does not represent the research on the subject in its entirety, although it was quite exhausting since it relied on four bases, featuring Scopus and Web of Science, two recognized databases in the area of management and business. But, for example, researches published in Brazil were not considered, except for those that were registered in the searched databases. Moreover, clustering was in general based on the reading of abstracts (only 160 papers available for full access), that is, the taxonomy emerged from the analysis of papers.

This study is an initial step in mapping the literature on idea management and thus, requires further research in each category, which would improve research and reduce the gap of factors that have not yet been studied about ideas in the context of innovation. Therefore it is proposed as future research a theoretical deepening in each of the categories identified by this study, in order to identify research gaps. The mapping of research on the subject in Brazil tends to be an interesting topic for future research, especially for comparison with this study, which has international scope.

7 Final remarks

Methodological procedures used in this paper emphasized bibliometric analysis. This practice, in addition to assisting in mapping the portfolio of papers, provided in a systematic way the acquisition

of a slice of the scientific knowledge on the topic and idea management also enables the replication of the research. Another factor that justifies the use of a systematic review to conduct this research is based mainly on the fact that bibliometric analysis enables and assists the synthesis and analysis of existing knowledge in the scientific literature on a research theme. Furthermore, bibliometric analysis allows the acquisition of information that readers may use to evaluate the appropriateness of the procedures employed in the literature review.

In this paper, the search for understanding the current scenario on the subject of idea management, with the criteria definition for the conduct of the research, resulted in a portfolio of 241 papers, which expanded the knowledge on the panorama of scientific production about it, but highlighting the special focus on innovation. Thus, the taxonomy proposed for segmentation of the papers stands out as contribution of this study. The taxonomy enabled categorizing a set of information that used to be diffused and now can be analyzed and turned into knowledge for the innovation area. As a result, we consider this study's contributions: (i) showing that ideas and their management are an emerging theme in the context of innovation research; (ii) identifying authors and journals that publish more on the topic, as well as the most cited papers; (iii) defining a taxonomy for categorizing studies on the subject.

This study is expected to be useful for those who wish to have an overview about the management of ideas for innovation, as well as a starting point for further research on the subject. Finally, a more refined research is suggested on the analysis of relevant papers within each category, in search of a better understanding of the state of the art and also in order to identify gaps for future research.

Acknowledgements

The authors thank the evaluators from Management & Production Magazine for the significant contribution to the improvement of this work.

References

- Aas, T. H. (2010). Implementing a value assessment tool for service innovation ideas. *International Journal of Innovation Management*, 14(6), 1149-1167. <http://dx.doi.org/10.1142/S1363919610003045>.
- Alam, I. (2003). Commercial innovations from consulting engineering firms: an empirical exploration of a novel source of new product ideas. *Journal of Product Innovation Management*, 20(4), 300-313. <http://dx.doi.org/10.1111/1540-5885.00027>.
- Andersson, M., & Johansson, B. (2008). Innovation ideas and regional characteristics: Product innovations and export entrepreneurship by firms in Swedish regions.

- Growth and Change*, 39(2), 193-224. <http://dx.doi.org/10.1111/j.1468-2257.2008.00417.x>.
- Aramburu, N., & Sáenz, J. (2011). Structural capital, innovation capability, and size effect: an empirical study. *Journal of Management & Organization*, 17(3), 307-325. <http://dx.doi.org/10.5172/jmo.2011.17.3.307>.
- Ardaiz-Villanueva, O., Nicuesa-Chacon, X., Brene-Artazcoz, O., Sanz De Acedo Lizarraga, M. L., & Sanz De Acedo Baquedano, M. T. (2011). Evaluation of computer tools for idea generation and team formation in project-based learning. *Computers & Education*, 56(3), 700-711. <http://dx.doi.org/10.1016/j.compedu.2010.10.012>.
- Aronson, Z. H., Reilly, R. R., & Lynn, G. S. (2008). The role of leader personality in new product development success: an examination of teams developing radical and incremental innovations. *International Journal of Technology Management*, 44(1-2), 5-27. <http://dx.doi.org/10.1504/IJTM.2008.020696>.
- Artz, K. W., Norman, P. M., Hatfield, D. E., & Cardinal, L. B. (2010). A longitudinal study of the impact of RD, patents, and product innovation on firm performance. *Journal of Product Innovation Management*, 27(5), 725-740. <http://dx.doi.org/10.1111/j.1540-5885.2010.00747.x>.
- Awazu, Y., Baloh, P., Desouza, K. C., Wecht, C. H., Kim, J., & Jha, S. (2009). Information-communication technologies open up innovation. *Research Technology Management*, 52(1), 51-58.
- Axtell, C. M., Holman, D. J., Unsworth, K. L., Wall, T. D., Waterson, P. E., & Harrington, E. (2000). Shopfloor innovation: facilitating the suggestion and implementation of ideas. *Journal of Occupational and Organizational Psychology*, 73(3), 265-285. <http://dx.doi.org/10.1348/096317900167029>.
- Ayuso, S., Rodríguez, M. A., & Ricart, J. E. (2006). Responsible competitiveness at the "micro" level of the firm: using stakeholder dialogue as a source for new ideas: A dynamic capability underlying sustainable innovation. *Corporate Governance*, 6(4)
- Baba, Y., Yarime, M., & Shichijo, N. (2010). Sources of success in advanced materials innovation: the role of "core researchers" in university-industry collaboration in Japan. *International Journal of Innovation Management*, 14(2), 201-219. <http://dx.doi.org/10.1142/S1363919610002611>.
- Baccara, M., & Razin, R. (2007). Bargaining over new ideas: the distribution of rents and the stability of innovative firms. *Journal of the European Economic Association*, 5(6), 1095-1129. <http://dx.doi.org/10.1162/JEEA.2007.5.6.1095>.
- Backman, M., Börjesson, S., & Setterberg, S. (2007). Working with concepts in the fuzzy front end: exploring the context for innovation for different types of concepts at Volvo Cars. *R & D Management*, 37(1), 17-28. <http://dx.doi.org/10.1111/j.1467-9310.2007.00455.x>.
- Baier, M., Graefe, G., & Roemer, E. (2008). Selecting promising business ideas for innovative IT services. *European Journal of Innovation Management*, 11(4), 560-576. <http://dx.doi.org/10.1108/14601060810911165>.
- Baker, N. R., Green, S. G., & Bean, A. S. (1985). How management can influence the generation of ideas. *Research Management*, 28(6), 35-42.
- Baregheh, A., Rowley, J., & Sambrook, S. (2009). Towards a multidisciplinary definition of innovation. *Management Decision*, 47(8), 1323-1339. <http://dx.doi.org/10.1108/00251740910984578>.
- Basadur, M., & Hausdorf, P. A. (1996). Measuring divergent thinking attitudes related to creative problem solving and innovation management. *Creativity Research Journal*, 9(1), 21-32. http://dx.doi.org/10.1207/s15326934crj0901_3.
- Bechtoldt, M. N., De Dreu, C. K. W., Nijstad, B. A., & Choi, H.-S. (2010). Motivated information processing, social tuning, and group creativity. *Journal of Personality and Social Psychology*, 99(4), 622-637. <http://dx.doi.org/10.1037/a0019386>. PMID:20919776.
- Beckett, R. C. (2010). Blending creativity and structure in implementing a novel idea. *International Journal of Product Development*, 11(3-4), 177-195. <http://dx.doi.org/10.1504/IJPD.2010.033957>.
- Bengtson, T. A. (1982). Creativity's paradoxical character: a postscript to James Webb Young's technique for producing ideas. *Journal of Advertising*, 11(1)
- Berman, E. M., & Kim, C.-G. (2010). Creativity management in public organizations: jump-starting innovation. *Public Performance & Management Review*, 33(4), 619-652. <http://dx.doi.org/10.2753/PMR1530-9576330405>.
- Binnewies, C., Ohly, S., & Sonnentag, S. (2007). Taking personal initiative and communicating about ideas: What is important for the creative process and for idea creativity? *European Journal of Work and Organizational Psychology*, 16(4), 432-455. <http://dx.doi.org/10.1080/13594320701514728>.
- Björk, J., & Magnusson, M. G. (2009). Where do good innovation ideas come from? Exploring the influence of network connectivity on innovation idea quality. *Journal of Product Innovation Management*, 26(6), 662-670. <http://dx.doi.org/10.1111/j.1540-5885.2009.00691.x>.
- Björk, J., Boccadelli, P., & Magnusson, M. G. (2010). Ideation capabilities for continuous innovation. *Creativity and Innovation Management*, 19(4), 385-396. <http://dx.doi.org/10.1111/j.1467-8691.2010.00581.x>.
- Björk, J., Di Vincenzo, F., Magnusson, M. G., & Mascia, D. (2011). The impact of social capital on ideation. *Industry and Innovation*, 18(6), 631-647. <http://dx.doi.org/10.1080/13662716.2011.591976>.
- Blau, J. R., & Mckinley, W. (1979). Ideas, complexity, and innovation. *Administrative Science Quarterly*, 24(2), 200-219. <http://dx.doi.org/10.2307/2392494>.

- Blohm, I., Bretschneider, U., Leimeister, J. M., & Krcmar, H. (2011). Does collaboration among participants lead to better ideas in IT-based idea competitions? An empirical investigation. *International Journal of Networking and Virtual Organisations*, 9(2), 106-122. <http://dx.doi.org/10.1504/IJNVO.2011.042413>.
- Bocken, N. M. P., Allwood, J. M., Willey, A. R., & King, J. M. H. (2011). Development of an eco-ideation tool to identify stepwise greenhouse gas emissions reduction options for consumer goods. *Journal of Cleaner Production*, 19(12), 1279-1287. <http://dx.doi.org/10.1016/j.jclepro.2011.04.009>.
- Bodell, L. (2010). What innovation programmes can learn from sales. *Journal of Direct, Data and Digital Marketing Practice*, 11(4), 268-274. <http://dx.doi.org/10.1057/ddmp.2010.5>.
- Boeddrich, H.-J. (2004). Ideas in the workplace: a new approach towards organizing the fuzzy front end of the innovation process. *Creativity and Innovation Management*, 13(4), 274-285. <http://dx.doi.org/10.1111/j.0963-1690.2004.00316.x>.
- Bommer, M., & Jalajas, D. S. (2004). Innovation sources of large and small technology-based firms. *IEEE Transactions on Engineering Management*, 51(1), 13-18. <http://dx.doi.org/10.1109/TEM.2003.822462>.
- Borjesson, S., Dahlsten, F., & Williander, M. (2006). Innovative scanning experiences from an idea generation project at Volvo Cars. *Technovation*, 26(7), 775-783. <http://dx.doi.org/10.1016/j.technovation.2005.01.005>.
- Bothos, E., Apostolou, D., & Mentzas, G. (2009). Collective intelligence for idea management with internet-based information aggregation markets. *Internet Research*, 19(1), 26-41. <http://dx.doi.org/10.1108/10662240910927803>.
- Bothos, E., Apostolou, D., & Mentzas, G. (2012). Collective intelligence with web-based information aggregation markets: The role of market facilitation in idea management. *Expert Systems with Applications*, 39(1), 1333-1345. <http://dx.doi.org/10.1016/j.eswa.2011.08.014>.
- Brahmbhatt, M., & Hu, A. (2010). Ideas and Innovation in East Asia. *The World Bank Research Observer*, 25(2), 177-207. <http://dx.doi.org/10.1093/wbro/lkp017>.
- Brem, A., & Voigt, K.-I. (2007). Innovation management in emerging technology ventures: the concept of an integrated idea management. *International Journal of Technology, Policy and Management*, 7(3), 304-321. <http://dx.doi.org/10.1504/IJTPM.2007.015113>.
- Brem, A., & Voigt, K.-I. (2009). Integration of market pull and technology push in the corporate front end and innovation management-Insights from the German software industry. *Technovation*, 29(5), 351-367. <http://dx.doi.org/10.1016/j.technovation.2008.06.003>.
- Bresciani, S. (2009). Innovation and creativity within firms: an empirical demonstration in the Piedmont area. *International Journal of Business Innovation and Research*, 3(4), 427-443. <http://dx.doi.org/10.1504/IJBIR.2009.027106>.
- Briggs, R. O., & Reinig, B. A. (2010). Bounded ideation theory. *Journal of Management Information Systems*, 27(1), 123-144. <http://dx.doi.org/10.2753/MIS0742-1222270106>.
- Brolø, A. (2009). Innovative coopetition: the strength of strong ties. *International Journal of Entrepreneurship and Small Business*, 8(1), 110-134. <http://dx.doi.org/10.1504/IJESB.2009.024108>.
- Buggie, F. D. (1995). Expert innovation teams: a new way to increase productivity dramatically. *Planning Review*, 23(4), 26-31. <http://dx.doi.org/10.1108/eb054516>.
- Burroughs, J. E., Dahl, D. W., Moreau, C. P., Chattopadhyay, A., & Gorn, G. J. (2011). Facilitating and Rewarding Creativity During New Product Development. *Journal of Marketing*, 75(4), 53-67. <http://dx.doi.org/10.1509/jmkg.75.4.53>.
- Campos, H. M., & Munoz, A. M. S. (2009). Business ideas and mental models: an exploratory qualitative study. *Revista Brasileira de Gestao de Negocios*, 11(32), 276-288.
- Čančer, V., & Mulej, M. (2006). Systemic decision analysis approaches: requisite tools for developing creative ideas into innovations. *Kybernetes*, 35(7-8), 1059-1070.
- Cantù, C. (2010). Exploring the role of spatial relationships to transform knowledge in a business idea - Beyond a geographic proximity. *Industrial Marketing Management*, 39(6), 887-897. <http://dx.doi.org/10.1016/j.indmarman.2010.06.008>.
- Castiaux, A. (2007). Radical innovation in established organizations: being a knowledge predator. *Journal of Engineering and Technology Management*, 24(1-2), 36-52. <http://dx.doi.org/10.1016/j.jengtecman.2007.01.003>.
- Chan, J., Fu, K., Schunn, C. D., Cagan, J., Wood, K. L., & Kotovsky, K. (2011). On the benefits and pitfalls of analogies for innovative design: ideation performance based on analogical distance, commonness, and modality of examples. *Journal of Mechanical Design, Transactions of the ASME*, 133(8), 081004. <http://dx.doi.org/10.1115/1.4004396>.
- Chen, J., Guo, Y., Huang, S., & Zhu, H. (2011). The determinants of the choice of innovation source for Chinese firms. *International Journal of Technology Management*, 53(1), 44-68. <http://dx.doi.org/10.1504/IJTM.2011.037237>.
- Cheung, P. K., Chau, P. Y. K., & Au, A. K. K. (2008). Does knowledge reuse make a creative person more creative? *Decision Support Systems*, 45(2), 219-227. <http://dx.doi.org/10.1016/j.dss.2007.02.006>.
- Chou, J. R. (2010). Concept mapping as a problem-solving tool for innovating product development (a case study). *Actual Problems of Economics*, 18-30.

- Chua, R. Y. J., Morris, M. W., & Ingram, P. (2010). Embeddedness and new idea discussion in professional networks: The mediating role of affect-based trust. *The Journal of Creative Behavior*, 44(2), 85-104. <http://dx.doi.org/10.1002/j.2162-6057.2010.tb01327.x>.
- Collado-Ruiz, D., & Ostad-Ahmad-Ghorabi, H. (2010). Influence of environmental information on creativity. *Design Studies*, 31(5), 479-498. <http://dx.doi.org/10.1016/j.destud.2010.06.005>.
- Connolly, T., Jessup, L. M., & Valacich, J. S. (1990). Effects of anonymity and evaluative tone on idea generation in computer-mediated groups. *Management Science*, 36(6), 689-703. <http://dx.doi.org/10.1287/mnsc.36.6.689>.
- Conway, H. A., & Mcguinness, N. W. (1986). Idea Generation in Technology-Based Firms. *Journal of Product Innovation Management*, 3(4), 276-291. <http://dx.doi.org/10.1111/1540-5885.340276>.
- Cooper, R. G. (1988). The new product process: a decision guide for management. *Journal of Marketing Management*, 3(3), 238-255. <http://dx.doi.org/10.1080/0267257X.1988.9964044>.
- Cooper, R. G., & Edgett, S. J. (2008). Ideation for product innovation: what are the best methods? *PDMA Visions*, 32(1), 12-17.
- Cooper, R. G., Edgett, S. J., & Kleinschmidt, E. J. (2002). Optimizing the stage-gate process: what best-practice companies Do-I. *Research Technology Management*, 45(5), 21-27.
- Cotterman, R., Fusfeld, A., Henderson, P., Leder, J., Loweth, C., & Metoyer, A. (2009). Aligning marketing and technology to drive innovation. *Research Technology Management*, 52(5), 14-20.
- Dahl, D. W., & Moreau, C. P. (2002). The influence and value of analogical thinking during new product ideation. *Journal of Marketing Research*, 39(1), 47-60. <http://dx.doi.org/10.1509/jmkr.39.1.47.18930>.
- Dailey, L. R., & Mumford, M. D. (2006). Evaluative aspects of creative thought: errors in appraising the implications of new ideas. *Creativity Research Journal*, 18(3), 385-390. http://dx.doi.org/10.1207/s15326934crj1803_11.
- Daniels, K., Wimalasiri, V., Cheyne, A., & Story, V. (2011). Linking the demands-control-support model to innovation: The moderating role of personal initiative on the generation and implementation of ideas. *Journal of Occupational and Organizational Psychology*, 84(3), 581-598. <http://dx.doi.org/10.1348/096317910X494269>.
- Das, A. (2002). ABB's funnel project sparks ideas, innovation. *Research Technology Management*, 45(3). Recuperado em 11 de maio de 2014, de <https://www.questia.com/read/1P3-119628883/abb-s-funnel-project-sparks-ideas-innovation>
- De Dreu, C. K. W., Nijstad, B. A., Bechtoldt, M. N., & Baas, M. (2011). Group creativity and innovation: a motivated information processing perspective. *Psychology of Aesthetics, Creativity, and the Arts*, 5(1), 81-89. <http://dx.doi.org/10.1037/a0017986>.
- De Jong, J. P. J., & Den Hartog, D. N. (2007). How leaders influence employees' innovative behaviour. *European Journal of Innovation Management*, 10(1), 41-64. <http://dx.doi.org/10.1108/14601060710720546>.
- Deloule, F., Roche, C., & Chanal, V. (2004). Gestion collaborative et capitalisation des idées émergentes en innovation. *Document Numerique*, 8(1), 67-80. <http://dx.doi.org/10.3166/dn.8.1.67-80>.
- Dhillon, B. S. (2006). New idea generation methods for engineers. *WSEAS Transactions on Circuits and Systems*, 5(6), 855-862.
- Di Gangi, P. M., & Wasko, M. (2009). Steal my idea! Organizational adoption of user innovations from a user innovation community: a case study of Dell IdeaStorm. *Decision Support Systems*, 48(1), 303-312. <http://dx.doi.org/10.1016/j.dss.2009.04.004>.
- Di Gangi, P. M., Wasko, M. M., & Hooker, R. E. (2010). Getting customers' ideas to work for you: learning from dell how to succeed with online user innovation communities. *Mis Quarterly Executive*, 9(4).
- Diehl, M., & Stroebe, W. (1991). Productivity loss in idea-generating groups: tracking down the blocking effect. *Journal of Personality and Social Psychology*, 61(3), 392-403. <http://dx.doi.org/10.1037/0022-3514.61.3.392>.
- Duran-Novoa, R., Leon-Rovira, N., Aguayo-Tellez, H., & Said, D. (2011). Inventive problem solving based on dialectical negation, using evolutionary algorithms and TRIZ heuristics. *Computers in Industry*, 62(4), 437-445. <http://dx.doi.org/10.1016/j.compind.2010.12.006>.
- Ebner, W., Leimeister, J. M., & Krcmar, H. (2009). Community engineering for innovations: the ideas competition as a method to nurture a virtual community for innovations. *R & D Management*, 39(4), 342-356. <http://dx.doi.org/10.1111/j.1467-9310.2009.00564.x>.
- EBSCO. Recuperado em 15 de dezembro de 2011, de <http://search.ebscohost.com>
- Eisenbeiss, S. A., van Knippenberg, D., & Boerner, S. (2008). Transformational leadership and team innovation: integrating team climate principles. *The Journal of Applied Psychology*, 93(6), 1438-1446. <http://dx.doi.org/10.1037/a0012716>. PMID:19025260.
- Elfvengren, K., Kortelainen, S., & Tuominen, M. (2009a). Managing the Front end of innovation with a group support system. *International Journal of Entrepreneurship and Innovation Management*, 10(3-4), 266-279. <http://dx.doi.org/10.1504/IJEIM.2009.025673>.
- Elfvengren, K., Kortelainen, S., & Tuominen, M. (2009b). A GSS process to generate new product ideas and business concepts. *International Journal of Technology Management*, 45(3-4), 337-348. <http://dx.doi.org/10.1504/IJTM.2009.022657>.

- Ellspermann, S. J., Evans, G. W., & Basadur, M. (2007). The impact of training on the formulation of ill-structured problems. *Omega: International Journal of Management Science*, 35(2), 221-236. <http://dx.doi.org/10.1016/j.omega.2005.05.005>.
- Engineering Village. Recuperado em 15 de dezembro de 2011, de www.engineeringvillage.com
- Erickson, C. L., & Jacoby, S. M. (2003). The Effect of Employer Networks on Workplace Innovation and Training. *Industrial & Labor Relations Review*, 56(2), 203-223. <http://dx.doi.org/10.1177/001979390305600201>.
- Ettlie, J. E., & Elsenbach, J. M. (2007). The changing role of R&D gatekeepers. *Research-Technology Management*, 50(5).
- Fairbank, J., Spangler, W., & Williams, S. D. (2003). Motivating creativity through a computer-mediated employee suggestion management system. *Behaviour & Information Technology*, 22(5), 305-314. <http://dx.doi.org/10.1080/01449290310001593630>.
- Fatur, P., & Likar, B. (2009). The development of a performance measurement methodology for idea management. *International Journal of Innovation and Learning*, 6(4), 422-437. <http://dx.doi.org/10.1504/IJIL.2009.024137>.
- Ferrioli, M., Dekoninck, E. A., Culley, S. J., Roussel, B., & Renaud, J. (2010). Understanding the rapid evaluation of innovative ideas in the early stages of design. *International Journal of Product Development*, 12(1), 67-83. <http://dx.doi.org/10.1504/IJPD.2010.034313>.
- Fern, E. F. (1982). The use of focus groups for idea generation: the effects of group size, acquaintanceship, and moderator on response quantity and quality. *JMR, Journal of Marketing Research*, 19(1), 1-13. <http://dx.doi.org/10.2307/3151525>.
- Flint, D. J. (2002). Compressing new product success-to-success cycle time: deep customer value understanding and idea generation. *Industrial Marketing Management*, 31(4), 305-315. [http://dx.doi.org/10.1016/S0019-8501\(01\)00165-1](http://dx.doi.org/10.1016/S0019-8501(01)00165-1).
- Flynn, M., Dooley, L., O'Sullivan, D., & Cormican, K. (2003). Idea management for organisational innovation. *International Journal of Innovation Management*, 7(4), 417-442. <http://dx.doi.org/10.1142/S1363919603000878>.
- Fornasiero, R., & Sorlini, M. (2010). Developing an assessment tool for innovation of product and service systems. *International Journal of Internet Manufacturing and Services*, 2(2), 166-185. <http://dx.doi.org/10.1504/IJIMS.2010.031788>.
- Gabberty, J. W., & Thomas, J. D. E. (2007). Driving creativity: Extending knowledge management into the multinational corporation. *Interdisciplinary Journal of Information, Knowledge, and Management*, 2, 1-13.
- Gans, J. S., & Stern, S. (2003). The product market and the market for "ideas": commercialization strategies for technology entrepreneurs. *Research Policy*, 32(2), 333-350. [http://dx.doi.org/10.1016/S0048-7333\(02\)00103-8](http://dx.doi.org/10.1016/S0048-7333(02)00103-8).
- Garfield, M. J., Taylor, N. J., Dennis, A. R., & Satzinger, J. W. (2001). Research report: modifying paradigms: individual differences, creativity techniques, and exposure to ideas in group idea generation. *Information Systems Research*, 12(3), 322-333. <http://dx.doi.org/10.1287/isre.12.3.322.9710>.
- Gautam, K. (2001). Conceptual blockbusters: creative idea generation techniques for health administrators. *Hospital Topics*, 79(4), 19-25. <http://dx.doi.org/10.1080/00185860109597914>. PMID:11942087.
- Geschka, H., Lenk, T., & Vietor, J. (2002). The idea and project database of WELLA AG. *International Journal of Technology Management*, 23(5), 410-416. <http://dx.doi.org/10.1504/IJTM.2002.003017>.
- Gibson, R., & Skarzynski, P. (2008). *Inovação: prionidade nº 1: o caminho para a transformação nas organizações*. Rio de Janeiro: Elsevier.
- Girotra, K., Terwiesch, C., & Ulrich, K. T. (2010). Idea generation and the quality of the best idea. *Management Science*, 56(4), 591-605. <http://dx.doi.org/10.1287/mnsc.1090.1144>.
- Goldenberg, J., Lehmann, D. R., & Mazursky, D. (2001). The idea itself and the circumstances of its emergence as predictors of new product success. *Management Science*, 47(1), 69-84. <http://dx.doi.org/10.1287/mnsc.47.1.69.10670>.
- Goldenberg, J., Mazursky, D., & Solomon, S. (1999). Toward Identifying the Inventive Templates of New Products: A Channeled Ideation Approach. *JMR, Journal of Marketing Research*, 36(2), 200-210. <http://dx.doi.org/10.2307/3152093>.
- Gordon, S., Tarafdar, M., Cook, R., Maksimoski, R., & Rogowitz, B. (2008). Improving the front end of innovation with information technology. *Research Technology Management*, 51(3):50-58.
- Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: systematic review and recommendations. *The Milbank Quarterly*, 82(4), 581-629. <http://dx.doi.org/10.1111/j.0887-378X.2004.00325.x>. PMID:15595944.
- Grunert, K. G., Verbeke, W., Kügler, J. O., Saeed, F., & Scholderer, J. (2011). Use of consumer insight in the new product development process in the meat sector. *Meat Science*, 89(3), 251-258. <http://dx.doi.org/10.1016/j.meatsci.2011.04.024>. PMID:21605939.
- Hage, J., & Hollingsworth, J. R. (2000). A strategy for the analysis of idea innovation networks and institutions. *Organization Studies*, 21(5), 971-1004. <http://dx.doi.org/10.1177/0170840600215006>.
- Hansen, E. G., Bullinger, A. C., & Reichwald, R. (2011). Sustainability innovation contests: Evaluating contributions with an eco impact-innovativeness typology.

- International Journal of Innovation and Sustainable Development*, 5(2-3), 221-245. <http://dx.doi.org/10.1504/IJISD.2011.043074>.
- Hargadon, A., & Sutton, R. I. (2000). Building an innovation factory. *IEEE Engineering Management Review*, 78(3), 157-166. PMID:11183977.
- Hartman, E. A., Tower, C. B., & Sebor, T. C. (1994). Information sources and their relationship to organizational innovation in small businesses. *Journal of Small Business Management*, 32, 36-47.
- Hellström, C., & Hellström, T. (2002). Highways, Alleys and By-lanes: Charting the Pathways for Ideas and Innovation in Organizations. *Creativity and Innovation Management*, 11(2), 107-114. <http://dx.doi.org/10.1111/1467-8691.00242>.
- Heslin, P. A. (2009). Better than brainstorming? Potential contextual boundary conditions to brainwriting for idea generation in organizations. *Journal of Occupational and Organizational Psychology*, 82(1), 129-145. <http://dx.doi.org/10.1348/096317908X285642>.
- Hesmer, A., Hribernik, K. A., Hauge, J. M. B., & Thoben, K. D. (2011). Supporting the ideation processes by a collaborative online based toolset. *International Journal of Technology Management*, 55(3-4), 218-225. <http://dx.doi.org/10.1504/IJTM.2011.041948>.
- Hey, J. H. G., Linsey, J. S., Agogino, A. M., & Wood, K. L. (2008). Analogies and metaphors in creative design. *International Journal of Engineering Education*, 24(2), 283-294.
- Heye, D. (2006). Creativity and innovation: two key characteristics of the successful 21st century information professional. *Business Information Review*, 23(4), 252-257. <http://dx.doi.org/10.1177/0266382106072255>.
- Hill, S. A., & Birkinshaw, J. M. (2010). Idea sets: conceptualizing and measuring a new unit of analysis in entrepreneurship research. *Organizational Research Methods*, 13(1), 85-113. <http://dx.doi.org/10.1177/1094428109337542>.
- Hirschmann, T., & Mueller, K. (2011). Social value creation: Outline and first application of a resource management approach to innovation. *International Journal of Innovation and Sustainable Development*, 5(2-3), 276-294. <http://dx.doi.org/10.1504/IJISD.2011.043076>.
- Howard, T. J., Culley, S. J., & Dekoninck, E. A. (2011). Reuse of ideas and concepts for creative stimuli in engineering design. *Journal of Engineering Design*, 22(8), 565-581. <http://dx.doi.org/10.1080/09544821003598573>.
- Howard, T. J., Dekoninck, E. A., & Culley, S. J. (2010). The use of creative stimuli at early stages of industrial product innovation. *Research in Engineering Design*, 21(4), 263-274. <http://dx.doi.org/10.1007/s00163-010-0091-4>.
- Howell, J. M., & Boies, K. (2004). Champions of technological innovation: The influence of contextual knowledge, role orientation, idea generation, and idea promotion on champion emergence. *The Leadership Quarterly*, 15(1), 123-143. <http://dx.doi.org/10.1016/j.leaqua.2003.12.008>.
- Hsu, Y. L., Hsu, P. E., & Hung, Y. C. (2009). Development of a design methodology based on patent and axiomatic design. *Journal of Quality*, 16(3), 153-163.
- Hunt, G. R., & Gray, R. D. (2007). Genetic assimilation of behaviour does not eliminate learning and innovation. *Behavioral and Brain Sciences*, 30(4), 412-413. <http://dx.doi.org/10.1017/S0140525X07002439>.
- Husig, S., & Kohn, S. (2009). Computer aided innovation-state of the art from a new product development perspective. *Computers in Industry*, 60(8), 551-562. <http://dx.doi.org/10.1016/j.compind.2009.05.011>.
- Hyland, P. W., Marceau, J., & Sloan, T. R. (2006). Sources of Innovation and Ideas in ICT Firms in Australia. *Creativity and Innovation Management*, 15(2), 182-194. <http://dx.doi.org/10.1111/j.1467-8691.2006.00378.x>.
- Ibarra, H. (1993). Network centrality, power, and innovation involvement: determinants of technical and administrative roles. *Academy of Management Journal*, 36(3), 471-501. <http://dx.doi.org/10.2307/256589>.
- Isherwood, P. (2008). Accelerating innovation through external partnerships. *Food Science and Technology (Campinas)*, 22(4):46-48.
- Jessup, L. M., Connolly, T., & Galegher, J. (1990). The effects of anonymity on GDSS group process with an idea-generating task. *Management Information Systems Quarterly*, 14(3), 313-321. <http://dx.doi.org/10.2307/248893>.
- Jones, E., Stanton, N. A., & Harrison, D. (2001). Applying structured methods to Eco-innovation. An evaluation of the Product Ideas Tree diagram. *Design Studies*, 22(6), 519-542. [http://dx.doi.org/10.1016/S0142-694X\(01\)00007-2](http://dx.doi.org/10.1016/S0142-694X(01)00007-2).
- Kalluri, V., & Kodali, R. (2014). Analysis of new product development research: 1998-2009. *Benchmarking: an International Journal*, 21(4), 527-618. <http://dx.doi.org/10.1108/BIJ-06-2012-0040>.
- Karni, R., & Shalev, S. (2004). Fostering innovation in conceptual product design through ideation. *Information, Knowledge, Systems Management*, 4(1), 15-33.
- Katila, R. (2002). New product search overtime: Past ideas in their prime? *Academy of Management Journal*, 45(5), 995-1010. <http://dx.doi.org/10.2307/3069326>.
- Kavadias, S., & Sommer, S. C. (2009). The Effects of Problem Structure and Team Diversity on Brainstorming Effectiveness. *Management Science*, 55(12), 1899-1913. <http://dx.doi.org/10.1287/mnsc.1090.1079>.
- Keegan, A., & Turner, J. R. (2002). The management of innovation in project-based firms. *Long Range Planning*, 35(4), 367-388. [http://dx.doi.org/10.1016/S0024-6301\(02\)00069-9](http://dx.doi.org/10.1016/S0024-6301(02)00069-9).

- Kerka, F., Kriegesmann, B., & Scherwing, M. G. (2009). Evaluating innovation ideas: A comprehensive approach to New Product Development. *International Journal of Technology Intelligence and Planning*, 5(2), 118-137. <http://dx.doi.org/10.1504/IJTIP.2009.024174>.
- Kijkuit, B., & Van Den Ende, J. (2010). With a Little Help from Our Colleagues: A Longitudinal Study of Social Networks for Innovation. *Organization Studies*, 31(4), 451-479. <http://dx.doi.org/10.1177/0170840609357398>.
- Kim, H., & Park, Y. (2010). The effects of open innovation activity on performance of smes: The case of Korea. *International Journal of Technology Management*, 52(3-4)
- Klofsten, M. (2005). New venture ideas: An analysis of their origin and early development. *Technology Analysis and Strategic Management*, 17(1), 105-119. <http://dx.doi.org/10.1080/09537320500044776>.
- Knoll, S. W., & Horton, G. (2011). Changing the perspective: using a cognitive model to improve thinklets for ideation. *Journal of Management Information Systems*, 28(1), 85-114. <http://dx.doi.org/10.2753/MIS0742-1222280104>.
- Kobayashi, M., Kawakami, T., & Higashi, M. (2010). Collaboration support method based on analyzing individual differences in designers' idea evaluation. *Nihon Kikai Gakkai Ronbunshu, C Hen/Transactions of the Japan Society of Mechanical Engineers, Part C*, 76(764).
- Koen, P. A., & Kohli, P. (1998). Idea generation: who has the most profitable ideas. *Engineering Management Journal-Rolla*, 10(4), 35-40. <http://dx.doi.org/10.1080/10429247.1998.11415006>.
- Koen, P. A., Ajamian, G., Burkart, R., Clamen, A., Davidson, J., D'Amore, R., Elkins, C., Herald, K., Incorvia, M., Johnson, A., Karol, R., Seibert, R., Slavejtkov, A., & Wagner, K. (2001). Providing clarity and a common language to the "fuzzy front end". *Research Technology Management*, 44(2), 46-55.
- Kohn, S., & Husig, S. (2006). Potential benefits, current supply, utilization and barriers to adoption: an exploratory study on German SMEs and innovation software. *Technovation*, 26(8), 988-998. <http://dx.doi.org/10.1016/j.technovation.2005.08.003>.
- Konnola, T., Brummer, V., & Salo, A. (2007). Diversity in foresight: Insights from the fostering of innovation ideas. *Technological Forecasting and Social Change*, 74(5), 608-626. <http://dx.doi.org/10.1016/j.techfore.2006.11.003>.
- Kornish, L. J., & Ulrich, K. T. (2011). Opportunity spaces in innovation: empirical analysis of large samples of ideas. *Management Science*, 57(1), 107-128. <http://dx.doi.org/10.1287/mnsc.1100.1247>.
- Krause, D. E. (2004). Influence-based leadership as a determinant of the inclination to innovate and of innovation-related behaviors: an empirical investigation. *The Leadership Quarterly*, 15(1), 79-102. <http://dx.doi.org/10.1016/j.leaqua.2003.12.006>.
- Krause, D. E. (2005). Leading for innovation: an empirical investigation (Innovationsförderliche führung - Eine empirische analyse). *Zeitschrift für Psychologie mit Zeitschrift für Angewandte Psychologie*, 213(2), 61-76. <http://dx.doi.org/10.1026/0044-3409.213.2.61>.
- Kurkkio, M., Frishammar, J., & Lichtenthaler, U. (2011). Where process development begins: a multiple case study of front end activities in process firms. *Technovation*, 31(9), 490-504. <http://dx.doi.org/10.1016/j.technovation.2011.05.004>.
- Leavy, B. (2005). A leader's guide to creating an innovation culture. *Strategy and Leadership*, 33(4), 38-45. <http://dx.doi.org/10.1108/10878570510608031>.
- Lee, M. W., Yun, M. H., & Han, S. H. (2001). High touch: an innovative scheme for new product development: case studies 1994-1998. *International Journal of Industrial Ergonomics*, 27(4), 271-283. [http://dx.doi.org/10.1016/S0169-8141\(00\)00056-1](http://dx.doi.org/10.1016/S0169-8141(00)00056-1).
- Legardeur, J., Boujut, J. F., & Tiger, H. (2010). Lessons learned from an empirical study of the early design phases of an unfulfilled innovation. *Research in Engineering Design*, 21(4), 249-262. <http://dx.doi.org/10.1007/s00163-010-0090-5>.
- Leimeister, J. M., Huber, M., Bretschneider, U., & Krcmar, H. (2009). Leveraging crowdsourcing: activation-supporting components for IT-based ideas competition. *Journal of Management Information Systems*, 26(1), 197-224. <http://dx.doi.org/10.2753/MIS0742-1222260108>.
- Levickaite, R., Reimeris, R., & Žemaitis, E. (2011). Social environment formation of creative industries community on the principles of informal learning and open innovations. *Philosophy. Sociology*, (2), 161-175.
- Licuanan, B. F., Dailey, L. R., & Mumford, M. D. (2007). Idea evaluation: error in evaluating highly original ideas. *The Journal of Creative Behavior*, 41(1), 1-27. <http://dx.doi.org/10.1002/j.2162-6057.2007.tb01279.x>.
- Lilien, G. L., Morrison, P. D., Searls, K., Sonnack, M., & Von Hippel, E. (2002). Performance assessment of the lead user idea-generation process for new product development. *Management Science*, 48(8), 1042-1059. <http://dx.doi.org/10.1287/mnsc.48.8.1042.171>.
- Linsey, J. S., & Viswanathan, V. K. (2010). Innovation skills for tomorrow's sustainable designers. *International Journal of Engineering Education*, 26(2), 451-461.
- Linsey, J. S., Clauss, E. F., Kurtoglu, T., Murphy, J. T., Wood, K. L., & Markman, A. B. (2011). An experimental study of group idea generation techniques: understanding the roles of idea representation and viewing methods. *Journal of Mechanical Design*, 133(3), 031008. <http://dx.doi.org/10.1115/1.4003498>.
- Linsey, J. S., Wood, K. L., & Markman, A. B. (2008). Modality and representation in analogy. *Artificial Intelligence for Engineering Design, Analysis and*

- Manufacturing*, 22(2), 85-100. <http://dx.doi.org/10.1017/S0890060408000061>.
- Linton, J. D., & Walsh, S. T. (2008). Acceleration and extension of opportunity recognition for nanotechnologies and other emerging technologies. *International Small Business Journal*, 26(1), 83-99. <http://dx.doi.org/10.1177/0266242607084660>.
- Lonergan, D. C., Scott, G. M., & Mumford, M. D. (2004). Evaluative aspects of creative thought: effects of appraisal and revision standards. *Creativity Research Journal*, 16(2-3), 231-246. <http://dx.doi.org/10.1080/10400419.2004.9651455>.
- Lovejoy, W. S., & Sinha, A. (2010). Efficient structures for innovative social networks. *Management Science*, 56(7), 1127-1145. <http://dx.doi.org/10.1287/mnsc.1100.1168>.
- Maccrimmon, K. R., & Wagner, C. (1994). Stimulating ideas through creativity software. *Management Science*, 10(11), 1514-1532. <http://dx.doi.org/10.1287/mnsc.40.11.1514>.
- Macias-Chapula, C. A. (1998). O papel da informetria e da cienciomtria e sua perspectiva nacional e internacional. *Ciências da Informação*, 27(2), 134-140.
- Madjar, N. (2008). Emotional and informational support from different sources and employee creativity. *Journal of Occupational and Organizational Psychology*, 81(1), 83-100. <http://dx.doi.org/10.1348/096317907X202464>.
- Magnusson, P. R. (2009). Exploring the contributions of involving ordinary users in ideation of technology-based services. *Journal of Product Innovation Management*, 26(5), 578-593. <http://dx.doi.org/10.1111/j.1540-5885.2009.00684.x>.
- Magnusson, P. R., Kristensson, P. O., & Hipp, C. B. (2010). Exploring the ideation patterns of ordinary users: the case of mobile telecommunications services. *International Journal of Product Development*, 11(3-4), 289-309. <http://dx.doi.org/10.1504/IJPD.2010.033963>.
- Mainemelis, C. (2010). Stealing fire: creative deviance in the evolution of new ideas. *Academy of Management Review*, 35(4), 558-578. <http://dx.doi.org/10.5465/AMR.2010.53502801>.
- Manolache, V., & Basu, M. (2010). Creativity is the future. *Metalurgia International*, 15(4), 35-39.
- Marx, A. E. (1998). A message to learning organizations: 'Please, ideas and innovation management!!'. *Southern African Forestry Journal*, (183), 17-24.
- Massetti, B. (1996). An empirical examination of the value of creativity support systems on idea generation. *Management Information Systems Quarterly*, 20(1), 83-97. <http://dx.doi.org/10.2307/249543>.
- McAdam, R., & McClelland, J. (2002a). Individual and team-based idea generation within innovation management: organizational and research agendas. *European Journal of Innovation Management*, 5(2), 86-97. <http://dx.doi.org/10.1108/14601060210428186>.
- McAdam, R., & McClelland, J. (2002b). Sources of new product ideas and creativity practices in the UK textile industry. *Technovation*, 22(2), 113-121. [http://dx.doi.org/10.1016/S0166-4972\(01\)00002-5](http://dx.doi.org/10.1016/S0166-4972(01)00002-5).
- McAdam, R., Reid, R., & Keogh, W. (2006). Technology and market knowledge creation and idea generation: an integrated quality approach. *International Journal of Technology Management*, 34(3-4), 340-359. <http://dx.doi.org/10.1504/IJTM.2006.009463>.
- McGuinness, N. W. (1990). New product idea activities in large technology based firms. *Journal of Product Innovation Management*, 7(3), 173-185. [http://dx.doi.org/10.1016/0737-6782\(90\)90002-V](http://dx.doi.org/10.1016/0737-6782(90)90002-V).
- Mitchell, R., Nicholas, S., & Boyle, B. (2009). The role of openness to cognitive diversity and group processes in knowledge creation. *Small Group Research*, 40(5), 535-554. <http://dx.doi.org/10.1177/1046496409338302>.
- Montoya-Weiss, M. M., & O'Driscoll, T. M. (2000). From experience: applying performance support technology in the fuzzy front end. *Journal of Product Innovation Management*, 17(2), 143-161. [http://dx.doi.org/10.1016/S0737-6782\(99\)00032-6](http://dx.doi.org/10.1016/S0737-6782(99)00032-6).
- Morgan, J., & Wang, R. (2010). Tournaments for ideas. *California Management Review*, 52(2), 77-97.
- Morrison, P. D., Roberts, J. H., & Von Hippel, E. (2000). Determinants of user innovation and innovation sharing in a local market. *Management Science*, 46(12), 1513-1527. <http://dx.doi.org/10.1287/mnsc.46.12.1513.12076>.
- Muhamdi, L., Daiber, M., Friesike, S., & Boutellier, R. (2011). The crowdsourcing process: An intermediary mediated idea generation approach in the early phase of innovation. *International Journal of Entrepreneurship and Innovation Management*, 14(4), 315. <http://dx.doi.org/10.1504/IJEIM.2011.043052>.
- Mullins, M. E., Kozlowski, S. W. J., Schmitt, N., & Howell, A. W. (2008). The role of the idea champion in innovation: The case of the Internet in the mid-1990s. *Computers in Human Behavior*, 24(2), 451-467. <http://dx.doi.org/10.1016/j.chb.2007.02.001>.
- Mumford, M. D., Feldman, J. M., Hein, M. B., & Nagao, D. J. (2001). Tradeoffs between ideas and structure: Individual versus group performance in creative problem solving. *The Journal of Creative Behavior*, 35(1), 1-23. <http://dx.doi.org/10.1002/j.2162-6057.2001.tb01218.x>.
- Munoz-Doyague, M. F., Gonzalez-Alvarez, N., & Nieto, M. (2008). An examination of individual factors and employees' creativity: The case of Spain. *Creativity Research Journal*, 20(1), 21-33. <http://dx.doi.org/10.1080/10400410701841716>.
- Murphy, S. A., & Kumar, V. (1997). The front end of new product development: a Canadian survey. *R & D Management*, 27(1), 5-15. <http://dx.doi.org/10.1111/1467-9310.00038>.

- Nagasundaram, M., & Dennis, A. R. (1993). When a group is not a group: the cognitive foundation of group idea generation. *Small Group Research*, 24(4), 463-489. <http://dx.doi.org/10.1177/1046496493244003>.
- Nelson, B. A., Wilson, J. O., Rosen, D., & Yen, J. (2009). Refined metrics for measuring ideation effectiveness. *Design Studies*, 30(6), 737-743. <http://dx.doi.org/10.1016/j.destud.2009.07.002>.
- Nijstad, B. A., & Stroebe, W. (2006). How the group affects the mind: a cognitive model of idea generation in groups. *Personality and Social Psychology Review*, 10(3), 186-213. http://dx.doi.org/10.1207/s15327957pspr1003_1. PMID:16859437.
- Nijstad, B., Stroebe, W., & Lodewijckx, H. F. (2002). Cognitive stimulation and interference in groups: exposure effects in an idea generation task. *Journal of Experimental Social Psychology*, 38(6), 535-544. [http://dx.doi.org/10.1016/S0022-1031\(02\)00500-0](http://dx.doi.org/10.1016/S0022-1031(02)00500-0).
- Nilsson, L., Elg, M., & Bergman, B. (2002). Managing ideas for the development of new products. *International Journal of Technology Management*, 24(5-6), 498-513. <http://dx.doi.org/10.1504/IJTM.2002.003067>.
- Nov, O., & Jones, M. (2006). Ordering creativity? Knowledge, creativity, and idea generation in the advertising industry. *International Journal of Product Development*, 3(2), 252-262. <http://dx.doi.org/10.1504/IJPD.2006.009374>.
- O'Connor, G. C., & Rice, M. P. (2001). Opportunity recognition and breakthrough innovation in large established firms. *California Management Review*, 43(2), 95-116. <http://dx.doi.org/10.2307/41166077>.
- Ohly, S., Kase, R., & Skerlavaj, M. (2010). Networks for generating and for validating ideas: the social side of creativity. *Innovation-Management Policy & Practice*, 12(1), 41-52. <http://dx.doi.org/10.5172/impp.12.1.41>.
- Ortlieb, R., & Stein, S. (2008). "Obtaining ideas is not the same as picking cherries from a tree" A political analysis of employee suggestion systems, supplemented by a case study. *German Journal of Research in Human Resource Management*, 22(4), 388-412.
- Paulus, P. B. (2000). Groups, teams, and creativity: the creative potential of idea-generating groups. *Applied Psychology*, 49(2), 237-262. <http://dx.doi.org/10.1111/1464-0597.00013>.
- Paulus, P. B., & Brown, V. R. (2007). Toward more creative and innovative group idea generation: a cognitive-social-motivational perspective of brainstorming. *Social and Personality Psychology Compass*, 1(1), 248-265. <http://dx.doi.org/10.1111/j.1751-9004.2007.00006.x>.
- Paulus, P. B., & Yang, H.-C. (2000). Idea generation in groups: a basis for creativity in organizations. *Organizational Behavior and Human Decision Processes*, 82(1), 76-87. <http://dx.doi.org/10.1006/obhd.2000.2888>.
- Perez-Freije, J., & Enkel, E. (2007). Creative tension in the innovation process: how to support the right capabilities. *European Management Journal*, 25(1), 11-24. <http://dx.doi.org/10.1016/j.emj.2006.11.005>.
- Pialot, O., Legardeur, J., & Boujut, J. F. (2011). Towards a multi-input model, method and tool for early design phases in innovation. *International Journal of Technology Management*, 55(3-4), 201-217. <http://dx.doi.org/10.1504/IJTM.2011.041947>.
- Piller, F. T., & Walcher, D. (2006). Toolkits for idea competitions: a novel method to integrate users in new product development. *R & D Management*, 36(3), 307-318. <http://dx.doi.org/10.1111/j.1467-9310.2006.00432.x>.
- Plucker, J. A., Runco, M. A., & Lim, W. (2006). Predicting ideational behavior from divergent thinking and discretionary time on task. *Creativity Research Journal*, 18(1), 55-63. http://dx.doi.org/10.1207/s15326934crj1801_7.
- Polverini, D., Graziosi, S., & Mandorli, F. (2011). A step-based framework to combine creativity, project management and technical development in industrial innovation. *International Journal of Product Development*, 14(1-4), 96-117. <http://dx.doi.org/10.1504/IJPD.2011.042295>.
- Ramus, C. A. (2001). Organizational support for employees: encouraging creative ideas for environmental sustainability. *California Management Review*, 43(3), 85-105. <http://dx.doi.org/10.2307/41166090>.
- Rexfelt, O., Almfelt, L., Zackrisson, D., Hallman, T., Malmqvist, J., & Karlsson, M. (2011). A proposal for a structured approach for cross-company teamwork: A case study of involving the customer in service innovation. *Research in Engineering Design*, 22(3), 153-171. <http://dx.doi.org/10.1007/s00163-011-0104-y>.
- Richer, M. C., Ritchie, J., & Marchionni, C. (2009). 'If we can't do more, let's do it differently!': using appreciative inquiry to promote innovative ideas for better health care work environments. *Journal of Nursing Management*, 17(8), 947-955. <http://dx.doi.org/10.1111/j.1365-2834.2009.01022.x>. PMID:19941568.
- Riedel, C., May, N., Finzen, J., Stathel, S., Kaufman, V., & Krcmar, H. (2009). An idea ontology for innovation management. *International Journal on Semantic Web and Information Systems*, 5(4), 1-18. <http://dx.doi.org/10.4018/jswis.2009100101>.
- Rietzschel, E. F. (2011). Collective regulatory focus predicts specific aspects of team innovation. *Group Processes & Intergroup Relations*, 14(3), 337-345. <http://dx.doi.org/10.1177/1368430210392396>.
- Rietzschel, E. F., & Janssen, O. (2008). Social and organizational psychological research on creativity and innovation in the Netherlands: an overview. *Gedrag en Organisatie*, 21(1), 74-87.
- Rietzschel, E. F., Nijstad, B. A., & Stroebe, W. (2009). After the brainstorm: the importance of effective idea selection. *Gedrag en Organisatie*, 22(1), 76-87.
- Rietzschel, E. F., Nijstad, B. A., & Stroebe, W. (2010). The selection of creative ideas after individual idea

- generation: choosing between creativity and impact. *British Journal of Psychology*, 101(Pt 1), 47-68. <http://dx.doi.org/10.1348/000712609X414204>. PMID:19267959.
- Rietzschel, E. F., Nijstad, B., & Stroebe, W. (2006). Productivity is not enough: a comparison of interactive and nominal brainstorming groups on idea generation and selection. *Journal of Experimental Social Psychology*, 42(2), 244-251. <http://dx.doi.org/10.1016/j.jesp.2005.04.005>.
- Roberts, E. B., & Fusfeld, A. R. (1981). Staffing the innovative technology-based organization. *Sloan Management Review*, 22(3), 19-34.
- Rochford, L. (1991). Generating and screening new product ideas. *Industrial Marketing Management*, 20(4), 287-296. [http://dx.doi.org/10.1016/0019-8501\(91\)90003-X](http://dx.doi.org/10.1016/0019-8501(91)90003-X).
- Rosa, J. A., Qualls, W. J., & Fuentes, C. (2008). Involving mind, body, and friends: Management that engenders creativity. *Journal of Business Research*, 61(6), 631-639. <http://dx.doi.org/10.1016/j.jbusres.2007.06.038>.
- Rothwell, R. (1994). Towards the fifth generation innovation process. *International Marketing Review*. London, 11(1), 7-31. <http://dx.doi.org/10.1108/02651339410057491>.
- Rubenstein, A. H. (1994). At the front end of the R&D/innovation process: idea development and entrepreneurship. *International Journal of Technology Management*, 9(5-7), 652-677.
- Russell, R. K., & Tippett, D. D. (2008). Critical success factors for the fuzzy front end of innovation in the medical device industry. *Engineering Management Journal*, 20(3), 36-43. <http://dx.doi.org/10.1080/10429247.2008.11431775>.
- Salter, A., & Gann, D. (2003). Sources of ideas for innovation in engineering design. *Research Policy*, 32(8), 1309-1324. [http://dx.doi.org/10.1016/S0048-7333\(02\)00119-1](http://dx.doi.org/10.1016/S0048-7333(02)00119-1).
- Sandström, C., & Björk, J. (2010). Idea management systems for a changing innovation landscape. *International Journal of Product Development*, 11(3-4), 310-324. <http://dx.doi.org/10.1504/IJPD.2010.033964>.
- Sankaran, R. A., Senthil, V., Devadasan, S. R., & Pramod, V. R. (2008). Design and development of innovative quality function deployment model. *International Journal of Business Innovation and Research*, 2(2), 203-222. <http://dx.doi.org/10.1504/IJBIR.2008.016653>.
- Santanen, E. L., Briggs, R. O., & De Vreede, G.-J. (2004). Causal relationships in creative problem solving: comparing facilitation interventions for ideation. *Journal of Management Information Systems*, 20(4), 167-197.
- Santos, R., & Spann, M. (2011). Collective entrepreneurship at Qualcomm: combining collective and entrepreneurial practices to turn employee ideas into action. *R & D Management*, 41(5), 443-456. <http://dx.doi.org/10.1111/j.1467-9310.2011.00660.x>.
- Satzinger, J. W., Garfield, M. J., & Nagasundaram, M. (1999). The creative process: the effects of group memory on individual idea generation. *Journal of Management Information Systems*, 15(4), 143-160.
- Schepers, J., Schnell, R., & Vroom, P. (1999). From idea to business: how Siemens bridges the innovation gap. *Research Technology Management*, 42(3), 26-31.
- Schulze, A., & Hoegl, M. (2008). Organizational knowledge creation and the generation of new product ideas: a behavioral approach. *Research Policy*, 37(10), 1742-1750. <http://dx.doi.org/10.1016/j.respol.2008.07.002>.
- Scopus. Recuperado em 15 de dezembro de 2011, de <http://www.scopus.com>
- Sebora, T. C., & Theerapatvong, T. (2010). Corporate entrepreneurship: a test of external and internal influences on managers' idea generation, risk taking, and proactiveness. *The International Entrepreneurship and Management Journal*, 6(3), 331-350. <http://dx.doi.org/10.1007/s11365-009-0108-5>.
- Seshadri, S., & Shapira, Z. (2003). The flow of ideas and timing of evaluation as determinants of knowledge creation. *Industrial and Corporate Change*, 12(5), 1099-1124. <http://dx.doi.org/10.1093/icc/12.5.1099>.
- Sharma, A. (1999). Central dilemmas of managing innovation in large firms. *California Management Review*, 41(3), 146-164. <http://dx.doi.org/10.2307/41166001>.
- Siau, K. L. (1996). Electronic creativity techniques for organizational innovation. *The Journal of Creative Behavior*, 30(4), 283-293. <http://dx.doi.org/10.1002/j.2162-6057.1996.tb00774.x>.
- Silveira, R., & Wright, R. (2010). Search and the market for ideas. *Journal of Economic Theory*, 145(4), 1550-1573. <http://dx.doi.org/10.1016/j.jet.2010.01.004>.
- Singh, J., & Agrawal, A. (2011). Recruiting for ideas: how firms exploit the prior inventions of new hires. *Management Science*, 57(1), 129-150. <http://dx.doi.org/10.1287/mnsc.1100.1253>.
- Smith, P. G., & Reinertsen, D. G. (1991). *Developing products in half the time*. New York: Van Nostrand Reinhold.
- Sorensen, L., & Nicolajsen, H. W. (2010). Service innovations: challenges of user involvement in idea generation. *IEEE Vehicular Technology Magazine*, 5(1), 48-54. <http://dx.doi.org/10.1109/MVT.2009.935545>.
- Sorli, M., Stokic, D., Gorostiza, A., & Campos, A. (2006). Managing product/process knowledge in the concurrent/simultaneous enterprise environment. *Robotics and Computer-integrated Manufacturing*, 22(5-6), 399-408. <http://dx.doi.org/10.1016/j.rcim.2005.12.007>.
- Sosik, J. J. (1997). Effects of transformational leadership and anonymity on idea generation in computer-mediated groups. *Group & Organization Management*, 22(4), 460-487. <http://dx.doi.org/10.1177/1059601197224004>.
- Sosik, J. J., Kahai, S. S., & Avolio, B. J. (1998). Transformational leadership and dimensions of creativity: Motivating idea generation in computer-mediated groups.

- Creativity Research Journal*, 11(2), 111-121. http://dx.doi.org/10.1207/s15326934crj1102_3.
- Sowrey, T. (1990). Idea generation: identifying the most useful techniques. *European Journal of Marketing*, 24(5), 20-29. <http://dx.doi.org/10.1108/03090569010140228>.
- Spanjol, J., Qualls, W. J., & Rosa, J. A. (2011). How many and what kind? the role of strategic orientation in new product ideation. *Journal of Product Innovation Management*, 28(2), 236-250. <http://dx.doi.org/10.1111/j.1540-5885.2010.00794.x>.
- Spencer, R. W., & Woods, T. J. (2010). The long tail of idea generation. *International Journal of Innovation Science*, 2(2), 53-63. <http://dx.doi.org/10.1260/1757-2223.2.2.53>.
- Spinak, E. (1996). *Diccionario enciclopédico de bibliometria, cienciométrica e informetria*. Montevideo. 245 p.
- Standing, C., & Kiniti, S. (2011). How can organizations use wikis for innovation? *Technovation*, 31(7), 287-295. <http://dx.doi.org/10.1016/j.technovation.2011.02.005>.
- Stanleigh, M. (2008). Guide to innovation. *Industrial Engineering (American Institute of Industrial Engineers)*, 40(6).
- Stevens, T. (1996). Converting ideas into profit. *IEEE Engineering Management Review*, 24(4).
- Sundström, P., & Zika-Viktorsson, A. (2009). Organizing for innovation in a product development project. Combining innovative and result oriented ways of working: a case study. *International Journal of Project Management*, 27(8), 745-753. <http://dx.doi.org/10.1016/j.ijproman.2009.02.007>.
- Sutton, R. I., & Hargadon, A. (1996). Brainstorming groups in context: effectiveness in a product design firm. *Administrative Science Quarterly*, 41(4), 685-718. <http://dx.doi.org/10.2307/2393872>.
- Tan, R., Ma, L., Yang, B., & Sun, J. (2008a). Systematic method to generate new ideas in fuzzy front end using TRIZ. *Chinese Journal of Mechanical Engineering*, 21(2), 114-119. <http://dx.doi.org/10.3901/CJME.2008.02.114>.
- Tan, R., Yang, B., & Zhang, J. (2008b). Study on patterns of idea generation for fuzzy front end using TRIZ. *Zhongguo Jixie Gongcheng*, 19(16), 1990-1995.
- Tidd, J., Bessant, J., & Pavitt, K. (2008). *Gestão da inovação* (3. ed.). Porto Alegre: Bookman.
- Tollin, K. (2008). Mindsets in marketing for product innovation: An explorative analysis of chief marketing executives' ideas and beliefs about how to increase their firms' innovation capability. *Journal of Strategic Marketing*, 16(5), 363-390. <http://dx.doi.org/10.1080/09652540802481934>.
- Toubia, O. (2006). Idea generation, creativity, and incentives. *Design Studies*, 25(5), 411-425.
- Toubia, O., & Florès, L. (2007). Adaptive idea screening using consumers. *Marketing Science*, 26(3), 342-360. <http://dx.doi.org/10.1287/mksc.1070.0273>.
- Troy, L. C., Szymanski, D. M., & Varadarajan, P. R. (2001). Generating new product ideas: an initial investigation of the role of market information and organizational characteristics. *Journal of the Academy of Marketing Science*, 29(1), 89-101. <http://dx.doi.org/10.1177/0092070301291006>.
- Tseng, I., Moss, J., Cagan, J., & Kotovsky, K. (2008). The role of timing and analogical similarity in the stimulation of idea generation in design. *Design Studies*, 29(3), 203-221. <http://dx.doi.org/10.1016/j.destud.2008.01.003>.
- Ugalde-Albístegui, M., & Zurbano-Bolinaga, V. (2009). Creativity and innovation: new ideas, old principles. *Dyna*, 84(2), 127-132.
- Utterback, J. M. (1971). Process of innovation: study of origination and development of ideas for new scientific instruments. *IEEE Transactions on Engineering Management*, EM18(4), 124-131. <http://dx.doi.org/10.1109/TEM.1971.6448350>.
- Valacich, J. S., Dennis, A. R., & Connolly, T. (1994). Idea generation in computer-based groups: a new ending to an old story. *Organizational Behavior and Human Decision Processes*, 57(3), 448-467. <http://dx.doi.org/10.1006/obhd.1994.1024>.
- Vandenbosch, B., Saatcioglu, A., & Fay, S. (2006). Idea management: a systemic view. *Journal of Management Studies*, 43(2), 259-288. <http://dx.doi.org/10.1111/j.1467-6486.2006.00590.x>.
- Verworn, B. (2006). How German measurement and control firms integrate market and technological knowledge into the front end of new product development. *International Journal of Technology Management*, 34(3-4), 379-389. <http://dx.doi.org/10.1504/IJTM.2006.009465>.
- Vinodh, S., Devadasan, S. R., & Rajanayagam, D. (2007). Innovations by preventing the breaking of electronic switches using Innovative Total Quality Function Deployment: a team-oriented effort in an Indian company. *International Journal of Process Management and Benchmarking*, 2(2), 152-169. <http://dx.doi.org/10.1504/IJPM.2007.015143>.
- Waguespack, D. M., & Birnir, J. K. (2005). Foreignness and the diffusion of ideas. *Journal of Engineering and Technology Management*, 22(1-2), 31-50. <http://dx.doi.org/10.1016/j.jengtecman.2004.11.005>.
- Web of Knowledge. Recuperado em 15 de dezembro de 2011, de webofscience.com
- Westerski, A., Iglesias, C. A., & Nagle, T. (2011). The road from community ideas to organisational innovation: a life cycle survey of idea management systems. *International Journal of Web Based Communities*, 7(4), 493-506. <http://dx.doi.org/10.1504/IJWBC.2011.042993>.
- Wierenga, B., & Van Bruggen, G. H. (1998). The Dependent Variable in Research Into the Effects of Creativity Support Systems: Quality and Quantity of Ideas. *Management*

- Information Systems Quarterly*, 22(1), 81-87. <http://dx.doi.org/10.2307/249679>.
- Wilson, J. O., Rosen, D., Nelson, B. A., & Yen, J. (2010). The effects of biological examples in idea generation. *Design Studies*, 31(2), 169-186. <http://dx.doi.org/10.1016/j.destud.2009.10.003>.
- Witell, L., Kristensson, P., Gustafsson, A., & Lofgren, M. (2011). Idea generation: customer co-creation versus traditional market research techniques. *Journal of Service Management*, 22(2), 140-159. <http://dx.doi.org/10.1108/09564231111124190>.
- Woodhead, R. M., & Berawi, M. A. (2008). An alternative theory of idea generation. *International Journal of Management Practice*, 3(1), 16044. <http://dx.doi.org/10.1504/IJMP.2008.016044>.
- Yang, C. J., & Chen, J. L. (2012). Forecasting the design of eco-products by integrating TRIZ evolution patterns with CBR and Simple LCA methods. *Expert Systems with Applications*, 39(3), 2884-2892. <http://dx.doi.org/10.1016/j.eswa.2011.08.150>.
- Zeng, L., Proctor, R. W., & Salvendy, G. (2011). Fostering creativity in product and service development: validation in the domain of information technology. *Human Factors*, 53(3), 245-270. <http://dx.doi.org/10.1177/0018720811409219>. PMID:21830511.
- Zheng, H. C., Li, D. H., & Hou, W. H. (2011). Task design, motivation, and participation in crowdsourcing contests. *International Journal of Electronic Commerce*, 15(4), 57-88.