SYSTEMIC REPRESENTATION OF IDEA MANAGEMENT:

A PROPOSED FRAMEWORK

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ABSTRACT

This paper presents the proposal for a framework to represent Idea Management (IM) in a systemic way, aligned with organizational structure. It considers Knowledge Management as a supportive element, in accordance with the practices of Open Innovation. Organizational capacity to stimulate innovation depends on the collection of ideas and their management. The systematic collection of external ideas has become popular due to the need of organizations to exchange internal and external inputs. However, collection alone cannot generate results. IM can act as an integrating mechanism between internal and external knowledge so that ideas generated are improved and evolve. For this research, an integrative review of the literature on ideas management was conducted following the parameters of Torraco (2005). For the construction of the proposed framework, based on Regoniel (2015), the important elements were selected, that is, elements described in the literature were identified and analysed to discover how they are related. Subsequently, the proposed framework was structured into three levels, with strategy as a central element. The first level refers to the supportive elements: Processes, People, Technology and Knowledge Management (KM). The second refers to the stages of IM - Preparation, Generation, Collection and Storage, Treatment (filtering and categorization), Enrichment, Evaluation, Selection, Refinement and Feedback and Follow-up. The third level refers to the results. In terms of practical implications, the research contributes to the clarification of the IM in Small and Medium-sized organizations. Ongoing research including verification with experts and field research could serve as guidance for implementation of IM in organizations.

Keywords: Innovation. Idea management. Knowledge management. Open innovation.

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1 INTRODUCTION

The exchange of internal and external inputs of an organization has Open Innovation as a strategic goal (BRUNSWICKER; CHESBROUGH, 2018). Open Innovation (OI) is defined as "a distributed innovation process based on purposely managed knowledge across organizational boundaries, using pecuniary and non-pecuniary mechanisms in line with each organization's business model" (CHESBROUGH; BOGERS, 2014, p.17). It is a process of exchanging, among multiple players, resources such as ideas, knowledge and materials (CHESBROUGH; LETTL; RITTER, 2018).

A common practice in the early stages of innovation is the implementation of innovation contests that allow access to a diverse set of external knowledge (BRUNSWICKER; CHESBROUGH, 2018). Discussions about this type of initiative, as well as mechanisms and tools that support it, grow exponentially in the literature. Examples are the studies on crowdsourcing, ideation and collaborative ideas generation, and ideastorming, among others (AFUAH; TUCCI, 2012, BOUDREAU; LAKHANI, 2013).

However, Brunswicker and Chesbrough (2018) have identified that companies, in practice, make limited use of the power of the crowd to develop solutions or ideas contests. The reason is that sometimes it is insufficient as an independent practice because the external knowledge received is incomplete.

When it comes to ideas, they are usually defined as the most embryonic form of a new product or service. They often consist of a high-level view of the expected solution to the problem identified by the opportunity (KOEN et al., 2002, KOEN; BERTELS; KLEINSCHMIDT, 2014). They can, for example, be expressed in a sentence, a paragraph or a scrawl, with few details and much to be developed.

In addition to incomplete knowledge, when one generates or systematically collects ideas, the volume increases exponentially. Gama (2018) concludes that collaborative ideation is widely recognized as an important practice for innovation. However, he concludes that capturing more ideas may not lead to better results. If the flow of new ideas is not organized and optimized, the benefits of gaining external knowledge may not be perceived by the organization.

In this context, Martini, Neirotti and Appio (2017) understand that the role of Idea Management, in the pursuit of external knowledge, is to serve as a catalyst mechanism, as well as to promote the integration of external and internal knowledge, in order to provide a collaborative network and co-creation. This is an important point of view because, according to Chesbrough, Lettl and Ritter (2018), there has been substantial research on Open Innovation projects, but the understanding of the processes of an organization to participate in Open Innovation projects is limited.

This article presents the proposal for a framework to represent Idea Management in a systemic way aligned with organizational structure. It considers Knowledge Management as a supportive element in accordance with the practices of Open Innovation.

The creation of this framework is also justified by the fact that literature is fragmented, thus the framework provides unification of the concepts related to the management of ideas.

2 BIBLIOGRAPHIC REVIEW: IDEA MANAGEMENT

The management of ideas is an important pillar in the innovation process, since recent studies have proposed it as one of the dimensions that most influence the capacity of a company to innovate (IDDRIS, 2016; DOROODIAN et al., 2014). It is also directly related to the sustainability of innovation (RAHMAN et al., 2015).

Initially, the main goal of IM was to capture employees' ideas for improvement (GLASSMAN, 2009). But Open Innovation initiatives include capturing ideas from outside entities such as customers, suppliers, inventors, universities and national laboratories (VRGOVIA et al., 2010).

IM, in its structuring, focuses on the use of systems and projects to manage ideas. It is based mainly on the field of innovation management in organizations and on the area of information technology where applications of idea management systems for sharing and storage of data are developed (WESTERSKI et al., 2011, BREM; VOIGT, 2009, BOTHOS; APOSTOLOU; MENTZAS, 2009).

The structuring of IM is also conducted using a defined process. The process starts from the recognition of the need for ideas, generation of ideas and evaluation (VANDENBOSH; SAATCIOGLU; FAY, 2006). In a recent literature review Gerlach and Breim (2017) identified six phases beginning with the preparation, generation of ideas, improvement, evaluation, implementation and development.

In this article, IM will be defined as a process related to the management of innovation, strongly supported by technologies and people, which can act as an integrating mechanism of internal and external ideas based on knowledge.

3 RESEARCH DESING

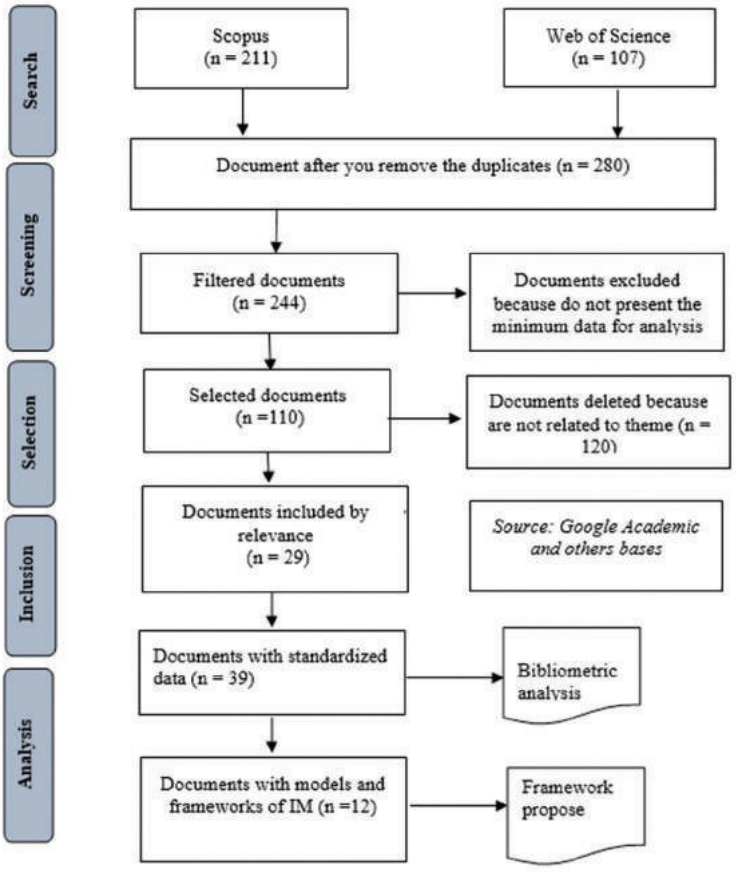
The construction of the proposed framework was based on the steps of Regoniel (2015). The first refers to the choice of theme. The choice of Idea Management as a theme aimed at structuring the systemic framework aligned with the organizational structure, considering Knowledge Management as a supportive element in accordance with Open Innovation practices.

The second step was the literature review. It was conducted following the parameters of Torraco (2005). The search of the Web of Science and Scopus databases was conducted in the second half of 2018, obtaining 309 documents as a result. Subsequently, those that presented models, frameworks and processes on IM were identified. The result of this check was a portfolio with 12 articles. Figure 1 represents the search flow to the final analysis portfolio.

The third step refers to the separation of the elements necessary to represent the framework. To identify the main elements, the 12 articles were analyzed and the essential elements were

isolated and grouped by semantic similarity as well as frequency. Thereafter, the systemic relationship of these element, as well as their arrangement in the structure presented in the next topic, was proposed.

Picture 1: Search flow to the final analysis portfolio



Source: The autor´s (2019)

The author anticipates a fourth step - field research - with the aim of verifying the framework and the need to include new elements. It is emphasized that this research is in its initial stage and therefore this step has not yet been conducted.

4 RESULTS

The main models and frameworks identified differ in their focus of interest (collaboration, actor network, information processing, semantics, knowledge modeling, Open Innovation) and are distributed in different publication years (1983 to 2018). Each model covers specific aspects of idea management that together enhance the state of the art of the theme. It has been found that many of the isolated concepts are integrated by the concept of Open Innovation, for example collaboration between market integration and knowledge modeling.

The proposed framework presents 3 levels based on a systemic view (Figure 2). The first level refers to the supporters of IM in an organization composed of the triad: People, Technology and Processes, plus Knowledge Management.

The latter is necessary, since the framework assumes that the idea management is a mechanism capable of promoting the integration of external and internal knowledge. An idea is considered as the set of knowledge elements.

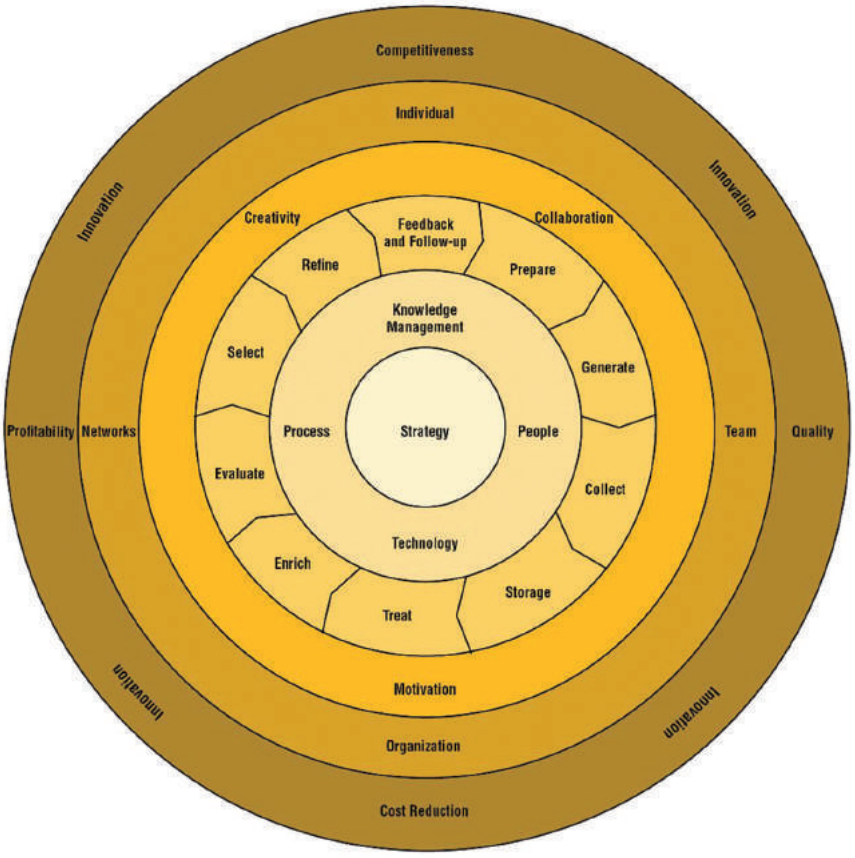
The second level refers to the IM process. The process has phases and each phase is associated with actors, tools and supporters of the first level. The third level is the results, which are influenced by the intensity of Collaboration, Creativity and Motivation that relates to individuals, teams, the organization and the network involved. The main results of IM are related to competitiveness, since it promotes cost reduction, increase of revenue with the incorporation of new products among others.

The initial and central point of IM is the strategic alignment with the organization. Glassman (2009) describes four activities to align process results with the strategic needs of the company: (1) review the company strategy, (2) determine the key areas where ideas should be explored (3) confirm the areas and 4) align the IM process.

Supporters, who make up the first level, help the operation of Idea Management initiatives.

Regarding People, they add value to the process with their abilities, skills and knowledge and can take on different roles. The function of providing ideas is that of the Ideator. He can be an internal collaborator, consumer, supplier, the community at large and other stakeholders (VOIGT; BREM, 2006, GERLACH; BREIM, 2017, GALLMEISTER; LUTZ, 2016). The Idea Manager or management team (GREEN; BEAN; SNAVELY, 1983, GERLACH; BREIM, 2017) is responsible for establishing program guidelines; delegating responsibilities and providing training for those involved (GALLMEISTER; LUTZ, 2016).

Picture 2: Proposed framework



Source: The autor´s (2019)

Actors can also form Review Groups, assigned by the Ideas Manager and responsible for reviewing the ideas received (IVERSEN et al., 2009). Similarly, Discussion Groups (GERLACH; BREIM, 2017) are responsible for improving ideas, and sometimes making the selection. With regard to selection, people can assume the role of Selector of Ideas, responsible for selecting ideas with greater potential to become innovative products to form a portfolio (GERLACH; BREIM, 2017).

There are also Specialists who hold domain knowledge and can be both internal and external. They are triggered at different stages of the IM process, depending on the knowledge needed.

It is noteworthy that these actors can form a Collaboration Network. This network is facilitated through a list of skills (HESMER; THOBEN, 2009). Finding the right people is a success factor for a program of ideas, if the right people are activated, the chances of good ideas moving forward is greater (VAGN, CLAUSEN; GISH, 2013).

Technology support refers to the tools and techniques that the organization has to support the processes of Ideas Management. Therefore, each phase of the IM process may require specific tools.

For example, brainstorming, problem analysis, conceptual mapping, customer focus groups, competing product mapping, product enhancement, technology development, research and information exchange are common (GALLMAISTER; LUTZ, 2016). Availability of and easy access to sources of knowledge and ideas are also common (GERLACH; BREM, 2017).

For the collection of ideas, physical or digital forms serve as supporters. They can include: the opportunity that the idea serves, the key elements, potential benefits to the client and the organization, as well as possible implementation difficulties (SANDSTROM; BJORK, 2010).

Computational tools for semantic analysis can be used to verify the similarity of ideas, to categorize them and to perform the filtering when necessary. These tools are useful at the end of the brainstorming phase and before the enrichment stage.

The use of Idea Management Systems allows people (internal or external) to exchange information and knowledge (ALESSI et al., 2015) and therefore supports various phases of IM, from collection to selection. For example, systems that allow the use of crowd wisdom or collective intelligence are ways to aid in the enrichment of ideas. The goal is to explore know-how and different perspectives (ALESSI et al., 2015). However, in addition to the technological tools, discussion groups (GERLACH; BREM, 2017) and Word Café are techniques that allow physical interactions and collaboration to improve ideas. Finally, decision support tools and techniques using criteria such as Hierarchical Multicriteria Analysis (AHP) are supporters for the selection phase of ideas. It is also worth noting that market research, as well as business modeling tools, can be used to refine ideas.

Knowledge Management (KM) is an integrated approach to identifying, creating, storing, sharing and applying knowledge (APO, 2009). It is considered to be supportive of IM as it facilitates the availability of knowledge required for the phases.

Examples of KM practices applicable to IM are: brainstorming; Storytelling (SERVIN, 2005); communities of practice (YOUNG, 2010); collaborative spaces for new ideas (APO, 2010); knowledge locator - connects people who need specific knowledge and people who have the knowledge (APO, 2010).

Advanced computational tools such as Data Mining to discover patterns, Knowledge Discovery in Databases (extraction of implicit, previously unknown, and potentially useful information) and big data analytics can also be included. In addition, there are storage techniques where ideas and knowledge can be stored, such as databases, blogs, business intelligence and conceptual maps (APO, 2010).

Organizational processes, especially those involving KM, are fundamental supporters of the IM phases. Furthermore, they should be periodically determined and improved with good practices and indicators and metrics.

The phases of Idea Management comprise the second level of the framework. From the literature review, seven (07) phases were identified. It should be noted that the analyzed frameworks and models differ in the number of phases. Glassman (2009), Aagaard (2013), and Gerlach and Brem (2017) had greater detail, therefore, they served as guides.

The preparation phase was the first to be considered (IVERSEN et al., 2009, AAGAARD, 2013, VAGN; CLAUSEN; GISH, 2013, GALLMEISTER; LUTZ, 2016, GERLACH; BREIM, 2017). Simply put, this phase is responsible for defining the program guidelines as well as preparing the environment and the people involved.

Following preparation, the ideas can be generated and/or collected. The generation of ideas is presented by all models and frameworks. In general, it is strongly supported by creative techniques and ideas can be generated from identified problems or opportunities. The collection is explicit in five frameworks (GREEN; BEAN; SNAVELY, 1983, HESMER; THOBEN, 2009, IVERSEN et al. 2009, AAGAARD, 2013, GALLMEISTER; LUTZ, 2016). Unlike generation, it is supported by mechanisms that provide means for systematic collection, such as forms, either physical or digital.

To facilitate management, ideas should be stored (GREEN; BEAN; SNAVELY, 1983, BREM; VOIGT, 2009, GLASSMAN, 2009, GALLMEISTER; LUTZ, 2016). There is a need to store ideas and other data about them. It is a phase that supports the others, because it makes the ideas, data, information and knowledge about them available. The evolution of ideas can be verified as new knowledge is added through the phases.

Once an idea is collected and stored, it becomes available for the initiation of improvement. However, depending on the number of ideas, it is suggested that filtering and categorization be carried out, as well as conducting a search for similar ideas. Although not explicitly considered a stage, this is recognized for facilitating enrichment (GALLMEISTER; LUTZ, 2016, EL BASSITI; AJHOUN, 2014).

The enrichment or improvement of ideas is considered in six of the twelve models and frameworks (VOIGT; BREM, 2006, HESMER; THOBEN, 2009, IVERSEN et al., 2009, EL BASSITI; AJHOUN, 2014, GALLMEISTER; LUTZ, 2016, GERLACH; BREIM, 2017). At this stage, the ideas initially suggested are reformulated and combined in a collaborative way by groups, both virtually and in person. Creative techniques and research are also used to add new information and knowledge to the initial ideas.

Supporting activities, such as the network formation of actors, as well as the routing and dissemination of ideas, have also been identified (GLASMANN, 2009). The goal is to get certain ideas to the right people to continue to be improved with the right knowledge.

Once the ideas reach a certain level of completeness and maturity, they are evaluated. This is an analytical phase, conducted using previously established criteria. It does not aim at the elimination of ideas, but rather at offering an opportunity for improvement and decision support. This phase was explained by Voigt and Brem (2006), Aagaard (2013), Iversen et al. (2009), Vagn, Clausen and Gish (2013), El Bassiti and Ajhoun (2014), Stankovitz (2014), Gerlach and Breim (2017).

In contrast, selection involves decision-making, in which ideas that have been improved and have greater detail are chosen to be part of the organization's portfolio. They are chosen on the basis of predefined criteria covering technological and technical issues, originality, the market (growth sector, potential clients), finance (possible costs and profits), whether the idea will be socially accepted among others (VALDATI, 2017). Moreover, the prioritization activity can be increased by forming a ranking of ideas (GALLMEISTER; LUTZ, 2016). All 9 models mention the selection phase (IVERSEN et al., 2009, HESMER; THOBEN, 2009, AAGAARD, 2013, VAGN, CLAUSEN; GISH, 2013, EL BASSITI; AJHOUN, 2014, STANKOVITZ, 2014, BARRIOS et al., 2018 AND GERLACH; BREIM, 2017).

After selection, ideas can be refined in order to add new information to their definition to become, in fact, a business concept or product (goods/service) (AAGAARD, 2013). At this stage, quick market research and other information can be collected.

During the phases it is necessary that there be constant feedback and follow-up. Feedback refers to the iteration between the system and actors and their feedback. Voigt and Brem (2009) and Gerlach and Brem (2017) point out the need for feedback and follow-up of the process and ideas to be conducted with indicators. Briefly, this phase is responsible for control measures, as well as the return of all activities carried out to the network of those involved.

Finally, the third level refers to the results of IM. It is influenced by the critical success factors present in the IM stages. They are related to areas that can be leveraged to increase the effectiveness of the intended action (LASARDO et al., 2016, BENBYA; LEIDNER, 2018, SANTOS et al., 2018). These factors influence and are influenced by Motivation, Creativity and Collaboration.

The factors can be individual, organizational and systemic (LASARDO et al. 2016).) Individual factors are related, for example, to intrinsic motivation and involvement, and influence Creativity. Organizational factors include, for example, information for the formation of networks that help to promote Collaboration. Factors related to the system encompass efficiency and constant feedback, as well as rewards that affect the Motivation of the people to participate.

All factors influence the success of IM. The result is cost reduction, increased profitability through the incorporation of new products based on ideas, product quality, process improvement, as well as individual results such as satisfaction and commitment to action and the result of IM (LASARDO et al., 2016) and consequently Competitiveness. Finally, the results of Idea Management are related at the individual, team, organizational and network levels.

5 CONCLUSIONS

The challenges of Idea Management have increased with the popularization of Open Innovation practices. It has developed from a mechanism focused on internal ideas, to the need to be a mechanism for integrating ideas from outside. In this paper we analysed the proposed models and frameworks for IM and constructed a proposed framework that represented IM systemically in the organization. Three levels were defined: The first level concerns the supporting elements based on the triad (People, Technologies and Processes) plus Knowledge Management, considering the concept of ideas adopted and the alignment with the definition of Open Innovation. The second level defined the phases of the Management of Ideas. And in the third level addressed the results that are influenced by collaboration, motivation and creativity. And these in turn refer to critical success factors and are related to results such as Competitiveness, Product Quality, Profitability among others.

This research contributes mainly to organizations in terms of clarification about the initial processes of innovation, specifically IM and its integration with the organization. This is a vital area for organizations and sets a challenge primarily related to Open Innovation initiatives. From the evolution of this work, verification with specialists of the framework proposal, as well as the deepening of each element and the verification of consistency through field research will be carried out.

REPRESENTAÇÃO SISTEMÁTICA DA GESTÃO DE IDEIAS:

UMA PROPOSTA DE FRAMEWORK

RESUMO

Este artigo apresenta uma proposta de um framework para representar a Gestão de Ideias (GI) de forma sistêmica e alinhada com a estrutura organizacional. Considera a Gestão do Conhecimento (GC) como elemento apoiador alinhando-a com as ações de inovação aberta. A capacidade organizacional para estimular a inovação é dependente de ideias e de sua gestão. A recolha sistemática de ideias externas se popularizou pela necessidade das organizações de trocarem insumos internos e externos, no entanto a recolha por si só não é capaz de gerar resultados. A GI pode atuar como um mecanismo integrador entre conhecimentos internos e externos a fim de que ideias geradas sejam melhoradas e evoluam. Para esta pesquisa, uma revisão integrativa foi feita sobre o tema Gestão de Ideias utilizando os parâmetros definidos por Torraco (2005). Para a construção da proposta de framework, seguiram-se as orientações de Regoniel (2015), e foram isolados os principais elementos e descritas as relações entre eles. Como resultado, o framework proposto foi estruturado em três níveis, tendo a estratégia como elemento central. O primeiro nível refere-se aos elementos apoiadores: Processos, Pessoas, Tecnologia e Gestão do Conhecimento. O segundo refere-se às fases da GI, sendo elas Preparação, Geração, Coleta & Armazenamento, Tratamento (filtragem e categorização), Enriquecimento, Avaliação, Seleção, Refinamento e Feedback & Acompanhamento. Por fim, o terceiro nível refere-se aos resultados. Sobre as implicações práticas, a pesquisa contribui para o esclarecimento da GI nas organizações. Com o andamento da pesquisa e futura verificação com especialistas e pesquisa de campo, pode servir como guia para a implementação da GI nas organizações.

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Palavras-Chave: Inovação. Gestão de ideias. Gestão do conhecimento. Inovação aberta.

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