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Managing knowledge – the importance of databases in the scientific production

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Abstract

The process of knowledge management results from the need to survive in a world dominated by innovation, and the need for its management is based on the creation of value. Knowledge is a process that occurs in three steps: creation, exploitation and maintenance. This steps lead to the creation of new knowledge, that in turn are feed by relations created among disciplines. This knowledge must be shared, and organizations shall find a way to do it in order to survive. So, databases might be a solution to promote creation of value and scientific production.

In this research one has done a review of state of the art, being this one an evaluation method that allows deepening about the subject, answering for the purpose of this paper. The question that is to answer is the following: what is the importance of databases in the scientific production? Collecting papers about subjects as knowledge management, databases and other, was the point of departure to get to a conclusion about the posed question.

In this study one can conclude that the objective is to create an automatic database that manage knowledge properly so that users just have to use it in a simple and quick way. Related to this, databases exist, but still present several limitations as for example involving manual work such as experts' validation. Although the impact of databases is not studied by literature, transdisciplinarity suggests that it would be favorable to scientific quality production: if we consider network as an enabler of scientific production, and if we consider databases a form of networking, it leads us to think that it would contribute to scientific quality production too.

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1. Keywords: Knowledge management, databases, interdisciplinarity, multidisciplinarity, transdisciplinarity, scientific production, innovation

1. Introduction

The process of knowledge management results from the need to survive in a world dominated by innovation, and the need for its management is based on the creation of value and competitiveness of organizations. Knowledge is a process that has to be captured, processed and reused to create new knowledge. It has to be created, exploited and maintained so that it can be used as organization's strategy [1]. To do so, interdisciplinarity, multidisciplinarity and transdisciplinarity contribute in this process, especially in the construction of new knowledge [2]. Managing knowledge is a complex matter because information is present on a large variety of data. Knowledge can be a critical and strategic factor and the key to competitiveness and success in highly dynamic environments, such as problem – solving facilitator. However, the demand for each time more intelligent systems obliges that knowledge has to be captured, processed, reutilized and disseminated so that it can accomplish each time more difficult tasks. Knowledge itself is already difficult to capture and explain, and these tasks become even more difficult in fields where data and models come in a wide variety of formats and scales or in systems in which adding value is not easy to get. Although the challenge of dealing with knowledge is an old problem, it is perhaps more relevant now than ever. The reason is that of joining the history of artificial intelligence with databases shows that knowledge is a critical point for a good performance of intelligent systems [1]. Already in the 1980's literature pointed a variety of theories of knowledge where they all pointed to the strategic importance of knowledge-based aspects and consequently the creation of knowledge has become the focus for practioneers and scholars [1]. Some models to explain knowledge creation emerged like the one of Nonaka and Takeuchi [1] in 1995, relating tacit knowledge with explicit knowledge as product of relations of socialization, externalization, internationalization and combination, but they weren't the only ones: academic research has developed a variety of micro models for knowledge creation organization [3].

Transdisciplinar research, after more than 20 years of design and development began to address epistemological challenges, taking advantage of research-action, and to new paradigms, such as the process of co-producing knowledge between scientific and non - scientific involving the coproduction of systems, targets, and knowledge transformation [4].

The aim of this work is to present a review under the theme of knowledge management, specially the contribution of databases in scientific production. The work is divided into the following parts: introduction, development, discussion and conclusions. In the introduction one presents a framework to the subject of research, in the development are defined some concepts related to knowledge, the importance of relations and network in the production of knowledge, knowledge construction and databases, and at last the importance of databases in the scientific production. Discussion and conclusions end this review.

2. Development

2.1. Knowledge – relations between disciplines.

Regarding the theme, it is appropriate to present some concepts. Knowledge is the information combined with experience, context, interpretation and reflexion. It's a high form of information value that is ready to be applied in decisions and actions [5]. The distinction between knowledge and information is that knowledge is fundamentally a question of cognitive abilities, while information assumes the form of structured and formatted data which remain inert and passive until be used by someone with the necessary knowledge to interpret and process them [6].

Knowledge management is the systematic process of creating, maintaining and encouraging an organization so that this one uses knowledge in the best way to get competitive advantage or get high performance in a sustainable way, which objectives allow the creation and sharing of knowledge [7]. Knowledge management is an approach to the management of the company (organization), in which knowledge has a fundamental and central role, bringing tools of the different functions and disciplines of management (human resources, quality management, operational management, marketing, etc.) [7].

Discipline is the set of specific knowledge that have their own characteristics in the field of education, training, of the mechanisms, methods and materials [8].

Interdisciplinarity is the interaction that exists between two or more disciplines, being able to integrate mutual managerial concepts to a simple communication of ideas. It is the mutual exchange and reciprocal integration enters various sciences [8].