Knowledge Governance and University Research Center

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Abstract: Universities Research Centers (URC) are our focus organizations. If we look at (URC) as an organization witch mission is create knowledge and value that knowledge, we must think how can we improve knowledge creation and how to value this knowledge, to different stakeholders (internal and external).

Taken a governance approach we can look to URC as a component of knowledge production Systems and also a creative space supported by networks of people and knowledge. So, knowledge is our start point to a theoretical reflection on the role of knowledge management and Knowledge Governance to increase the production and valorization of knowledge.

In Open Science context, URC need to get more knowledge on open research data and on open research publication. The question is not about whether Open Science or not, but how to implement it.

Keywords: Knowledge Governance, knowledge Management, University Research Center, Knowledge Processes, Research evaluation.

Introduction

For our purpose, we will follow an organizational dynamic perspective represented by four authors. Nonaka and Takeuchi (1995) defined knowledge as a dynamic process of justifying true belief. Another useful and pragmatic definition of knowledge is presented by Davenport and Prusak: "Knowledge is a fluid mix of framed experiences, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knower's. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms" Davenport and Prusak (1998, p. 5).

Explicit Knowledge and tacit knowledge

Polanyi (1962)divided the human knowledge in two dimensions: explicit knowledge (written, codified and easy to transfer) and tacit knowledge (personal, internalised, and hard to communicate).

To simplify, we can think on the main difference between information and knowledge; the information is codified, whereas knowledge can, or not, be codified; in other words, information is explicit and the knowledge can be explicit and tacit. This difference is clear in our common language when we ask "Where is this information?" or "Who knows this?"

Kakabadse *et al.* (2003) on its literature revision about knowledge management, considered that the chain of the knowledge flow is data-information-realization-action/reflection-wisdom. Data represents observations or facts out of context; information results from placing data within some meaningful content; realization can be conceived of as information put to productive use; through action and reflection one may also gain wisdom.

This division help to simplify our approach to knowledge, but we must remember that explicit knowledge and tacit knowledge are complementary and its conversion creates chances for the knowledge creation (Nonaka, 1991). So, while some researchers view those two knowledge dimensions as distinct, Alavi and Leiner (2001) suggest "not dichotomous states of knowledge, but mutually dependent and reinforcing qualities of knowledge".

Kaklauskas *et al.* (2009) followed this idea saying "There are two essential branches of knowledge management – explicit and tacit", considering that explicit knowledge is related with information technologies, where documents and data are stored within the memory of computers. They agree that "this information must be easily accessible, so that stakeholders could get all the necessary knowledge without disturbances". But management must care also with tacit knowledge, knowledge housed in the human brain, such as: expertise, understanding, skills, professional intuition, competence, experience, organizational culture, informal organizational communication networks, intellectual capital of an organization, ideals, traditions, values, and emotions (see next Figure).

Figure 1 - Tacit knowledge elements
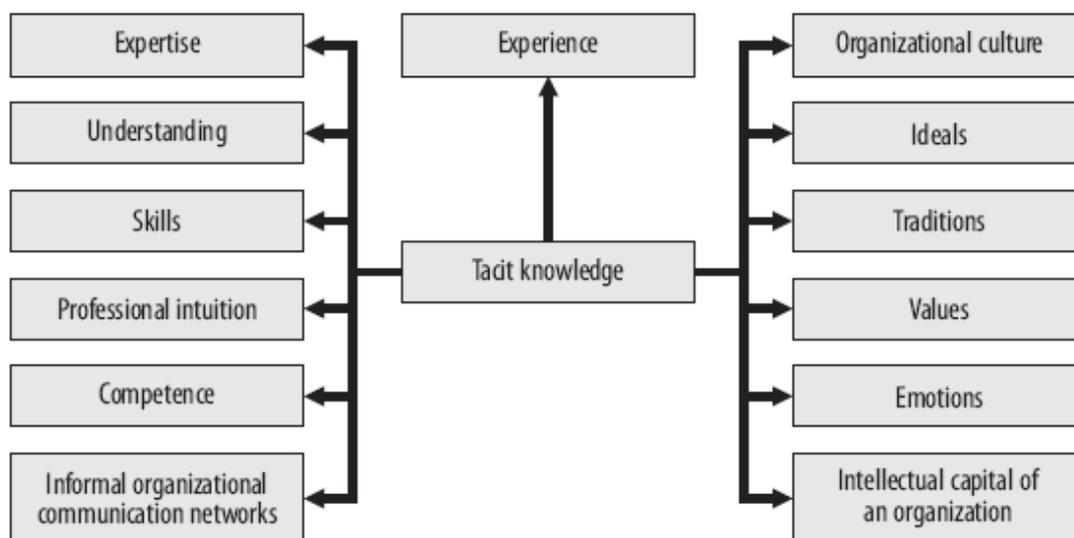
Source: Kaklauskas *et al.* (2009)

Knowledge Management

Carla O'Dell and Jackson Grayson (1998) give us a knowledge management definition focused on benefits for individuals and for organization: "the conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organizational performance"(O' Dell & Grayson, 1998, p. 6). This definition looks at KM as an organization strategy. In this way, KM is a kind of service, which must be useful and customized, to different stakeholders. First, organization have the perception of knowledge value; then decide maximize knowledge through a strategic implementation KM.

KM operationalization can have a service perspective, *i. e.*, organization create a service in order to facilitate knowledge access, knowledge creation, knowledge transfer and knowledge dissemination. That service must be alight with organization mission/objectives and with individual's motivations/needs. Linking KM with service concept, take us to value creation from intellectual capital. Qureshi *et al.* (2006) notice "while value is often measured in monetary terms, value can manifest in many dimensions: affective, cognitive, physical, social, political, and so on" (Qureshi *et al.*, 2006, p. 197). This is related to our start point "knowledge as a resource". Knowledge have value when is used. If we can facilitate it use we add value to knowledge.

Knowledge Governance

The term "governance" has several meanings. According to the political scientist Roderick Rhodes, the concept of governance is currently used in contemporary social sciences with at least six different uses: the minimal State, corporate governance, new public management, good governance, social-cybernetic systems and self-organized networks (Rhodes, 1996). It originates from the need of one umbrella that covered diverse meanings not enclosed by the traditional term "government". It is related to change, or to the need of changing, in our network society. So, governance, in this sense, refers to self-organizing, inter organizational networks (Rhodes, 1996).With this perspective, governance has shared characteristics:

Interdependence between organizations. Governance is broader than government, covering non-state actors. Changing the boundaries of the state meant the boundaries between public, private and voluntary sectors became shifting and opaque;

Continuing interactions between network members, caused by the need to exchange resources and negotiate shared purposes;

Game-like interactions, rooted in trust and regulated by rules of the game negotiated and agreed by network participants.

This author tries to understand change in British government in the 1990s. Privatization, loss of functions, accountability are some words used to give a big picture of the new reality, where networks are a "challenge to governability, because they become autonomous and resist central guidance" (Rhodes, 1996).

Society has become too complex to be steered in a centralized, unified manner (Pellizzoni, 2003) and there is a need to change the way of perceiving the world (Wierzbicki, 2007). In industrial society, perception of the world was mechanistic (world as a clock), but in informational/knowledge civilization the perception must deal with complex systems which cannot be reduced to the properties of systems components. As an example, this author says that chaos theory can help to understand society as a dynamic system, whose states evolve with time. Chaotic behavior is also observed in natural systems, such as the weather/climate; in this field study, mathematical models are used, embodying laws of physics, to find some kind of order (patterns) emerging out of chaos. This way of thinking may also be applied to understand the social world too.

When we try to join "knowledge" and "governance" we must choose in what ontological dimension level we stay (macro, meso or micro) and what kind of knowledge to be considered. If we stay at national level (macro), knowledge governance can be about how to facilitate use of scientific knowledge by industry to increase international competitive position. At organizational level (meso) a choice of one strategic focus on how knowledge should be managed to benefit organization, can be considered organizational knowledge governance. Similarly, for individual level (micro) maximize individual knowledge for increasing individual performance can be also part of knowledge governance. This macro-meso-micro perspective can help to separate systems elements and also integrate then when we need a dynamic outlook of the change and coordination of the system (Dopfer *et al.*, 2004; Hannah & Lester, 2009).

Emerging knowledge governance approach "is characterized as a distinctive, emerging approach that cuts across the fields of knowledge management, organization studies, strategy and human resource management" (Foss, 2007). For this author knowledge governance is taken up with how the deployment of governance mechanisms influences knowledge processes, such as sharing, retaining and creating knowledge. It insists on clear micro (behavioral) foundations, adopts an economizing perspective, and examines the links between knowledge-based units of analysis with diverse characteristics and governance mechanisms with diverse capabilities of handling these transactions.

Research Center (RC)

We defend that RCs are organizations where individuals work based upon interdisciplinary teams. Issues like critical mass and synergy are crucial if we want build those environments as components of knowledge production ecosystems.

From economic view, traditionally it is possible to measure science with an input-output framework. From this perspective, it is possible "to conduct accounting or evaluation exercises of investments in science" (Godin, 2007). This conceptual model is used to collect and analyse data in terms of input and output, where inputs are investments in the resources necessary to conduct scientific activities, like money and scientific and technical personnel. Outputs are what come out of these activities: knowledge and inventions. In Figure 2, a simple framework can illustrate the relationship between input and output.

Figure 2 - Production function

This is a linear model (Input→Research Activities→Output) useful to translate the knowledge production function. In this way, Universities Research Centers outputs are results of using inputs with knowledge production purposes. To simplify reality, new knowledge is produced from existing knowledge through the various research activities or knowledge processes (knowledge acquisition, knowledge creation, knowledge sharing and knowledge transfer (Boardman & Corley, 2008; Pinho & Pinho, 2015; Pinho *et al.*, 2012).

We consider Research Centers as organizational spaces, that facilitate networks building through collaboration and competition, where co-creation knowledge happens (Leite *et al.*, 2014). We take a service-oriented logic of value creation by looking the Knowledge Management as a service that create value, improving knowledge use and re-use among different researchers, crossing organizational boundaries (Grönroos, 2011; Laudien & Daxboeck, 2016; Pinho & Pinho, 2015).

The role of Knowledge Manager in a Research Center

Traditionally a RC is a sum of individuals; by taken a human resource management perspective we can overcome this narrowly focused and look to the work team or to the organization working based on internships. Those internships can be categorized on a continuum, from low to high degrees of governance (Lain *et al.*, 2014; Lowndes & Skelcher, 1998). In a context fourth age of research, driven by international collaboration between research groups, Research Center Knowledge Management is crucial (Adams, 2013; Rego *et al.*, 2009).

The role of Knowledge Manager is multilevel. At strategic level there it is need to ask if the Research Center have a strategy for managing knowledge (Hansen *et al.*, 1999). At operational level the focus is also knowledge (explicit knowledge and tacit knowledge). To manage explicit knowledge or information, Knowledge Manager can put in action some rules, such as promoting the use of persistent identifiers. In practical terms, this facilitates connecting researchers with their research, with their research projects, with their research centers, with their Institutions. To manage tacit knowledge they must facilitate social knowledge processes by providing environments for knowledge flows through research networks and knowledge networks (Leite *et al.*, 2014; Pinho *et al.*, 2012; Rego *et al.*, 2009).

Knowledge Manager is a T-shaped manager .The concept of T-shaped manager is a concept introduced by Hansen and Von Oetinger (2001) is related to the value of managers being both accountable for the organizational performance excellence , and for the shared success of

their members., driving by excellent Knowledge Management. We can take a similar approach when it comes to the role of the Research Knowledge Manager (RKM) at Research Centers. In this context RKM need to evaluate the situation. If the organization assumes that knowledge is only available to each research project there is a need to overcome this knowledge stickiness (Szulanski & Jensen, 2004). RKM is a new kind of executive, one who goes beyond traditional hierarchy to share knowledge across the organization (horizontal part of the "T") while remaining committed to unit performance (the vertical part).

Research Centers and Open Science

At global level some steps are done to build Open Science. New publishing models are developed to implement Opens Access (Swan & Brown, 2004). European Commission issued begins by providing guidelines to implement Open Access to mandate requiring that research outputs from Horizon 2020. Some universities, research centers, research funders and international organizations have already that mandate, because they are linked with funding research, such as FP7. At the moment, H2020 co-financed projects are exploring new territories: Open Research Data. Issues like Data Management Planning, Sharing data, Research integrity, Integrated Scientific Information System are insights that need to be managed.

Researchers, publications, datasets, authors, projects, data providers, data users, organizations and all society are nodes of global Open Science Network. In this context we can ask: Research Centers are ready to Open Science?

In sum, we defend that Knowledge Management at Research Centers can help not only to improve knowledge production, but also to improve Knowledge Visibility, Knowledge Use and re use, and knowledge impact.

The successful Science Open implementation requires accurate resources, the involvement of stakeholders and effective training. This new research context gives new avenues for issues around monitoring and the research assessment as well those related to information infrastructures. All those elements and its relationships are embedded in Knowledge Governance space.

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