A critical account of intra -and inter- organizational knowledge management:
Diversity, relationship making, and paradoxes

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Abstract. Knowledge and networks (i.e., inter-organizational relationships) are two full conditions for successful intellectual capital management and organizational success. However, when researching related issue that fall into the domain area, people tend to follow more pragmatism and few would spend page space for more critical account of the nature of the issues examined. This article tried to revisit knowledge management in intra- and inter-organizational networked contexts and offer some critical insights that might stimulate more thinking in research and practices. Mainly, this article suggests thoughts on diversity, relationship making, and resolving paradoxical knowledge challenges.

Keywords. Organization memory, Knowledge bases, Known memory.

JEL. D80, L22, L23.

1. Introduction

The importance of Knowledge-based View of organizational studies is mainly represented in several imperatives that are inter-connected. These imperatives include: explanations for why organizations exist; how do organizations manage idiosyncratic knowledge assets that may help facilitate competitive advantages; what are difficulties or tensions for successfully implementing KM (e.g., the internal knowledge market phenomenon, the sticky versus leaky paradox, and so on) (Grant, 1996a; Grant, 1996b; Lieberskind, 1996; Read, 1996; Spender, 1996; Tsoukas, 1996).

1.1. Why do organizations exist?

Shared goal(s) seems to be a traditionally and commonly accepted answer for this question (Kogut, & Zander, 1992; Nahapiet, & Ghoshal, 1998). However, more specific explanations have also been pursued for a long time, and from diverse disciplinary perspectives. For example, from economic view, the existence of an organization stresses resource sharing, risk sharing, or collective efficiencies in cost, time, and so for.

From the perspective of knowledge management, a new rationale that has been proven distinctive from the social and economic perspectives, a fresh look can be constructed in a premise that an organization is an inventory of information and professions that can be leveraged for creating collective values, and that organizational capabilities are built for creating, sharing, combining, protecting, and using knowledge assets (Foss, 1996a; Foss, 1996b; Grant, 1996a; Grant, 1996b; Lieberskind, 1996; Nonaka, 1991; Spender, 1996; Tsoukas, 1996). In such premise, it is easier to understand that why there comes a group of people from different areas and struggle to complete shared tasks with collective contributions. Organizations act as more efficient governance structure in that people may work

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under shared task norms and process knowledge more effectively, as compared to market mechanism (Antonelli, 2005; Antonelli, 2006; Antonelli, 2008a; Antonelli, 2008b). Moreover, processing knowledge within organizations bring to the members more sense of security and identification.

Knowledge work requires cooperation, knowledge work content is special, knowledge work is a non-linear process (Bock *et al.,* 2005; Mäkelä & Brewster, 2009). For a new generation of workers, economic incentives are no longer a decisive factor in working independently or entering an organization. Rather, it is the organization of the knowledge group aggregation, image, reputation and its structure for the knowledge workers can enjoy the development. Because the organization is the continuous accumulation of knowledge and a updater of a knowledge base, members in the organization can encounter their own learning model (or become someone else's learning model), members' professional construction make up of an organization's external image (or organizational knowledge is itself an incentive for attracting new members, even more, a collective of community-like individuals can be the polymerization of knowledge together for facing the external pressure and problem. Additionally, because the tacit knowledge sharing and understanding is required for a common cognitive system, members need to be engaged in joint activities for a certain period of time for relationship nutrition, which cannot be achieved is persons are physically distributed.

1.2. Intangible assets management mechanism and unique organizational advantages

Knowledge management means that through strategic adoption, such as organizational infrastructure, processes, intellectual capital and contents, etc., in order to enable the knowledge flow, and further form a basis for members to create, acquire, learn, apply knowledge (Alavi & Leidner, 2001; Wagner, 2005).

The purpose of knowledge sharing and circulation is to make the internal members of the organization have a common knowledge system. This set of knowledge systems must be distributed through the efficient sharing routines to spread the knowledge scattered throughout the organization. Moreover, after the knowledge is aggregated, it needs to be systematically presented to be used knowledge integration procedures to become the basis for knowledge creation. This way as a unique knowledge management capability becomes the distinction between the focal organization and its competing counterparts, it is also a key success factor that an organization can create more excess profits than any other organization. In such vein, it is argued here that the importance of knowledge management to the organization should be investigated from the level of the fundamental processual system to that of a strategic imperative.

A noteworthy point is that in addition to internal knowledge integration, the importance of integrating external knowledge, especially the cross-disciplinary ones, through external organizational relationships is getting critical. For example, the Microsoft and 3com collaborative relationship has brought us two kinds of thinking: On the one hand, through external knowledge sharing and integration, organizations can gain complementary knowledge and activate the organization knowledge base, reducing the core of the opportunity. But on the other hand every organization involved in external knowledge relations may have a question: the expansion of knowledge integration is only our (organization) wishful thinking? In other words, even in the presence of an organization's core technology / knowledge, after signing an agreement or contract of knowledge-oriented cooperation it will still be difficult to operate it with fully open minds, based on the assumption of self-interests in human nature. These concerns seem lead to inevitable knowledge alliance paradoxes and tensions.

1.3. Knowledge economy and knowledge-based view

Why do we need to explore business and management issues from a Knowledge Economy perspective (Adler, 2001; Doz *et al.,* 2001; Felin *et al.,* 2009; Kim & Mauborgne, 1997)? First, because the reality and type of business models have been changed. The reality of management is always ahead of management theory. We have been living in a new era of information services, innovation-oriented new economy. Even the product must be given a new spirit, packaging with dynamic knowledge to give way to extend the life cycle. As Stewart said, because the knowledge itself has become an important product of the sale of goods and services, while the accumulation of knowledge assets gets more and more important, the organization does need new management skills, technology and strategy to face the industrial revolution with very different organizational thinking.

Second, while the key to competitive advantage turns from tangible assets to intangible assets, hundreds of times the amount of information needs to be processed. The organization's primary mission thus is changed to filtering, processing, and transforming the information into a knowledge and preventing information explosion. Organizational design, operations, and even marketing strategies must revolve around these critical knowledge processing requirements.

Finally, the system dynamics towards a positive direction also reinforces the legitimacy of thinking about corporate activities from a knowledge perspective. Brian Arthur's law of increasing returns noted that once the knowledge has entered the stage of success, its following positive effect turns out to be snowballing like. Such logic also makes a variety of industries think in a more knowledge oriented way in regarding to the issue of responding to environmental challenges. Despite the high-tech industry, there are already many traditional small and medium enterprises, or agriculture and fisheries, through technical knowledge to achieve the goal of organizational upgrading.

No matter the detailed issues of the organization versus market in knowledge processing is, a comprehensive trend has occurred, which can be make explicit by comparing between Kogut and Zander's articles in different time stages. Their earlier article (Kogut, 1992) focused on discussing a more formal form of organization, when comparing to the market; later their works started to consider more flexible forms of organizations within and across the boundary of an organization (Kogut & Zander, 1996; Kogut & Zander, 2000; Zander & Kogut, 1995). Since then, requirements for organizational capability also become different - from governing and controlling to coordinating and collaborating. This argument also leads a need for discussing KM beyond an organization's physical boundary as follow.

2. Inter-organizational and International KM

The major scope of Inter-organizational knowledge management research can be represented a series of questions to explore the overall phenomenon structure, including: how does the difference between the organizations affect the differences in function and the role definition of KM in a cooperative situation; the knowledge coordination and integration in the case of the multinational enterprise; what kind of challenges and programs are unique in interorganizational collaboration for KM.

Daft & Engel (1984) treated an organization as an information filtering and processing machine system. Under this assumption, the organization monitors, receives, and respond to information from inside and outside the environment. However, knowledge and information is different. In general, the processing of information involved explicit facts, words or phenomena, while knowledge processing is involved in the relatively complex visible or invisible materials, such as implicit Ideas, phenomenon meaning, and diversified Interpretation Logic (Tsoukas, 1996). In addition, the information processing has a clear set of rules with hierarchical specifications, while knowledge processing is a nonlinear process with the need for frequent interactions among people, system, and rules at multiple

levels. Actually, in the knowledge economy, the challenges facing the organization today are mostly knowledge issues, not information topics. Assuming an organization as a knowledge processing and creation organism might be more realistic than regarding it as a linear information I-P-O machine. Thus, the coordination and integration of knowledge has become an important issue that organizations have to face, independently and/or collaboratively.

And this issue is more important in the context of multinational enterprises. In multinational enterprises, subunits face different knowledge situations. That is, between the units created, face and deal with, the application of knowledge is not only scattered but also highly embedded in the system, humanities and social, economic situation. In such context, the knowledge integration promoted by Grant (1996) and the multinational corporation's knowledge and coordination articulated by Kogut & Zander (1992) turn together to become an imperative about how to integrate the knowledge of decentralized and local contexts into a whole set of knowledge systems possessed by one multinational organization. Such challenge can be even more important if such multinational organization is of a special type, such as social enterprise.

Given a strong assumption knowledge creation one of the few ways to create value and revitalize an organization (Nonaka, 1995), Cozened *et al.,* (1999) proposed for treating the subunits of an multinational enterprise as a set of networked knowledge organizations. In such way, the focus of circulation and continual transformation of the "spiral" of knowledge creation would be the knowledge de-localization. Knowledge creation, sharing/flow, and integration are the processes *and* the purpose, the purpose *and* the process. The question is how to accomplish such duality? Take socialization as an example, although the physical or geographical distance is an important factor in the process of socialization (because people need to interact), but the may be other measures for such socialized relationships and interactions. Relationship perception as an instance is as equal importance as physical relationship, because it deals with the gap between biases and reality of a relationship. This respond to, and crystalize, the relational proximity concept Cohendet and colleagues have proposed, which emphasizes the importance of gaining proximity, both physically and relationally, in order to strengthen the transfer of tacit knowledge, cognitive materials, and localized knowledge objects. This is more critical because physical proximity can be achieved be simple ways such as frequent personnel exchanges, but relational proximity that is essentially more cognitive and psychological requires more enduring investment in relationship (or Guanxi or other localized conceptualization of relationships, as it is in MNC context).

In addition, in the conversion from explicit to explicit knowledge, the issue of how to effectively classify existing knowledge (that is, systematic work) has an important impact on the creation of new knowledge. And this can usually be done through sub-units between knowledge-based meetings and two-way conversations. Still another example, the process of knowledge internalization involves not only a knowledge transfer into the inner knowledge system, but also the ability to absorb after the transfer. Review works are highly demanded and need to be incorporated onto the HR evaluation system. All of these processes can be assisted by computer assisted Relationship making technology (CTN). CTN adoption can overcome the difficulties of knowledge coordination and integration among the dispersed functions, such as: group software, the Internet for explicit knowledge of the flow and storage of the contribution of instant messaging technology for remote cannot face to face communication problems. Reflected more, a new organizational working procedures set will be needed, including integrative organizational processes, technology (and standard) alignment, and collaborative arrangement of course. These new conceptual elements for organizing may lead to new practice designs in our workplace.

If we read Kogut and colleagues' articles carefully (Kogut, 1992; 1996; 2000), it is clear that authors sketched a skeleton of the knowledge system based on a

"knowledge coordination → sharing of cognitive and behavioral norms → value creation and distribution" logic. What matter under this framework are various levels of analysis and issue foci, including: the existence of the knowledge network, the formation of the network structure and evolution, the the creation and distribution of rent within the knowledge network, etc.

3. Synthetic comments: Diverse, networked, and paradoxical knowledge challenges

For a geographically and culturally diverse network organization, it is necessary to coordinate decentralized and diverse knowledge, construct difficult challenges to share knowledge basics, or solve new processes by new technology. But no matter how much the new technology and process help, successful KM still depends on the structure of the human capital and the relationship between the different forms of capital to be vitalized. If there is only technology in the space, and no human resource management and the relationship management mechanisms are constructed between subunits of an organization, the coordination of the organizational knowledge and the creation of the unique knowledge ability will still be a difficult challenge.

In combination with the above, three associated issues of knowledge management with paradoxical nature are worth discussing. First, knowledge is located and transacted in internal market of an organization. How to make the exchange/transactions in knowledge market smooth is one of the key to the success of internal knowledge management activities. Because knowledge market transactions (exchanges) mean that knowledge is shifted, spread, or absorbed, knowledge market transactions are nothing more than the cost-effectiveness of knowledge transfer, transfer, and absorption. The challenge here comes from the lack of information of the knowledge market per se, the lack of knowledge of the value assessment (bounded rationality), the loss of knowledge caused by the inconsistency of the knowledge structures, and the lack of communication channels.

The second challenge in the knowledge market is that knowledge activities are a socially associated activity, especially for implicit knowledge. Here the so-called social, embodied in two places: First, the main carrier of knowledge is people, especially complex, unspeakable knowledge. Secondly, the cooperation and connection of knowledge work make the knowledge carriers need to participate in joint social activities, such as: dialogue, example demonstration and other oral non-oral communication, just in order to carry out knowledge transfer and learning. In this case, the success of knowledge activities not only from the economic point of view. Most of the knowledge workers are individuals with independent thinking and ideas, and the working relationship is no longer the "you demand then I do" employment relationship. The relationship of knowledge owners, personality, the relationship with the knowledge needs, whether the knowledge is treated as "no-sharing power", will affect the knowledge market operation. In other words, the knowledge market is not a traditional market type that "as long as you can afford it, I will sell it to you". Gupta & Govindarajan (2000) cited four Nucor knowledge sharing tasks as: cognitive assessment sharing opportunities, encourage sharing, build efficient and effective sharing of channels, convince people to trust and use shared knowledge, can be seen Knowledge management activities should really think about more in human resource management.

Brown & Duguid (2001) reminded a very interesting paradox: knowledge stickiness (difficult to transfer) & leaky (easy to spill over). With the knowledge mobility attributes, the two seem to be contradictory knowledge characteristics, and demand different governance mechanisms. The stickiness issue is concerned with the flow of knowledge between the various units within the organization, while the leaky problem cares about preventing excessive spillovers. Both can be observed in practices, though, the problem of both do not actually come from the tacit-or-

explicit nature of knowledge. On the contrary, the stickiness is constrained by the context where the knowledge is originally embedded, while the leaky issue deals a lot with human motivation.

This kind of paradox highlights the need for further discussion of the relationship between knowledge and organization as its major embedded context. The community of practices is not only a sub-unit used in the organization to carry out dynamic knowledge activities, but also a subsystem that is specific to knowledge processing. Emphasizing the heterogeneity of knowledge expertise does cause the gap between the knowledge community within the organization, engaged in different groups of practice, its inherent knowledge base or acquired knowledge of the orientation will be differentiated, hence the challenge is that the ecological composition of knowledge workers within the organization is usually diversified. However, the differentiation also brings different thinking about the organization's ability. In fact, if the organization can effectively coordinate and integrate the knowledge generated by these differentiated communities through the operation of the network mechanism, the overall knowledge base of the ascension and uniqueness of the building is helpful for organizational performance. Compared with the departmental units in the formal organization chart, it is more meaningful to integrate the knowledge among the knowledge groups within the organization from the perspective of the practical community. Nelson & Winter (1982) tells us that the organization has the ability to store the knowledge of different individuals in routine routines that are scattered within the organization, which means that the organization has a capacity that can be scattered throughout the market Knowledge is concentrated in a shared environment. Thus, most importantly, the ability to organize the integration of knowledge among different communities is determined to virtually provide the organization with an advantage and justification for its superiority to the market.

In the past literature, the homogeneity hypothesis in the organization is open to question. In fact, the organization is full of heterogeneity and, diversity, so how to organize the internal departments of the coordination of knowledge between the departments is a very important issue (the "how" issue). First, Organizations have the function of coordinating internal individual activities. In addition to the geographical proximity of the members to provide more contact to discuss the opportunity to communicate, the organization provides a set of organizing methods (rather than just organization spaces) from the internal members of the activities responsible for a set of related logic. With this set of associative logic, homogeneous members are naturally brought together, sharing a task program or context, and driving the smooth development and execution of routine tasks, thereby driving the so-called task efficiency. Second, Identity can basically be regarded as a group of organizations to share the beliefs and cognition. Compared to the market, the organization is more advantageous than the market in the creation of human collectives and retaining member consensus. Even we may be bold to say: in the market is difficult to scattered members of the pool together from a common identification. However, such collective with consensus does not only guarantee procedural and distributive fairness when members process knowledge collectively. Evident problems such as self-interest behavior are difficult to be avoided and managed in the market mechanism designed by purely economic rationality. Last but not least, Organizational advantage can be sustained in continuous learning. Organization of learning is implemented with members in coordination and with shared identity in the organizational knowledge system. Continuous learning is constantly assist the organization's' knowledge base and memory to be constantly updated and upgraded.

Back to the organizing structure issue that might offer the most fundamental accommodation for the above-mentioned synthesis. What is the positioning of the organization's network in KM theories relative to the market and the internal hierarchy? Compared to Williamson (1999) and Powell (1990), Kogut and colleagues argued that the market is an extreme example of the form of the network

(p.407), but relative to the pure economic considerations and transactive mechanisms, networked organization needs to consider the more to cover the technology, societal system and higher-level factors. Because of this, the market mechanism allows more diverse knowledge but relatively is lack of coordination and integration capacity, while the internal hierarchy in the adjustment of the more efficient and easy to inert of knowledge but difficult to proceed diversity. Relatively, again, the network structure seems to be an effective hybrid form of achieving a balance between the paradoxical situations of market and hierarchy. The main reason may be that the networked governance mechanism can tolerate a certain degree of connectivity to maintain freedom for individual members of the organization to build unique identification and relationships. On the other hand, members not only share a certain degree of knowledge base, but due to their loosely-coupled relationship, individual members can have their own "knowledge adventure" and achieve knowledge structure flexibility in aggregate. Hence, the organization of the boundaries seems to be shared by a cognitive system that defines shared membership (including membership), rather than by the traditional view of the organizational boundaries from product division, physical asset investment or internal task structure.

In the knowledge management of the networked organization, concerning the ability to coordinate the individual knowledge worker is as important as concerning the ability for integrating the scattered and dispersedly embedded knowledge pieces. Naturally now, when it comes to governance, an intuitive thinking come up of the need to "design" an appropriate network structure to enforce a network KM strategy or at least keep it running smoothly. However, what always need to be remembered is that, the knowledge network structure may be a result of interaction between members of the organization influenced by the internal and external network variables. Perhaps the word "design" in the traditional strategic (and knowledge) management view overly emphasized the proactiveness but overlooked co-evolution among the elements in the knowledge system and ecology. Here the most important theoretical and practical signal is that the network structure and mode of operation is itself a set of knowledge systems on that network, which is extremely difficult to be imitated.

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