Organizational Structure

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INTRODUCTION

For many decades, organization scientists have paid considerable attention to the link between knowledge and organization structure. An early contributor to these discussions was Max Weber (1922), who elaborated his concepts of professional bureaucracy. History shows a multitude of other descriptions and propositions which depict knowledge-friendly organization structures such as the 'organic form' for knowledge-intensive innovation promoted by Burns and Stalker (1961), professional bureaucracies and adhocracies described by Mintzberg (1983), and the brain metaphor for organization structure (Morgan, 1986). Discussions on such knowledge-friendly organization structures led to many neologisms including the flexible, intelligent, smart, hypertext, N-form, inverted, network, cellular, or modular organization.

This article discusses the fundamental importance of organization structure for a knowledge perspective on organizations. This discussion involves two classes of questions. Organization structure can be studied as the backdrop against which the knowledge aspects of organizations take shape. Key questions then are how different structural configurations involve stimuli and barriers to the generation and embedding of organizational knowledge through such processes as knowledge exploration and knowledge sharing. Organization structure can also be studied from the perspective of organization design, which is the premeditated construction or change of organization structure (see Bowditch & Buono, 1985). Questions that appear then include: what are possible design interventions and how does one assess their knowledge-friendliness? The article addresses both classes of questions. Its objective therefore is: (1) to look at what defines a knowledge-friendly organization structure, and (2) to explore which interventions organizations have at their disposal when trying to achieve such a structure.

BACKGROUND

The importance of organization structure is well established in the discussions that address matters of organizational knowledge and associated concepts such as creativity, learning, or R&D activities in organization design (e.g., Myers, 1996). Yet, in the stricter circle of studies that explicitly present themselves as knowledge management (KM) studies, organization structure plays second fiddle to issues of ICT and HRM. Organization structure concerns patterns of work relationships (a more elaborate definition of organization structure is given below). Such work relationships can be predefined (formal organization structure) or organically evolving (informal organization structure). There is a general recognition that relationships among individuals in collectives are centrally important in the organizational production of knowledge and its organizational embedding (e.g., Blackler, 1995). Several trends lend support to the idea that the perspective of knowledge workers and their work relationships should guide discussions of organization design. These trends include the increased complexity in the competitive environment, the greater pressure on innovation and proactive manipulation of markets, and the emergence of provisional structural arrangements such as in network organizations and organizational networks.

A common undertow in these discussions is that knowledge workers need the freedom or autonomy to decide for themselves when to establish work relationships. Such accounts stress that the formal organization structure can be a burden to knowledge aspects of work. They argue that organizational knowledge shows up much better in the informal organization structure (such as communities of practice, e.g., Brown & Duguid, 2001). As Teece (2000, pp. 39-40) puts it: "The migration of competitive advantage away from tangible assets towards intangible ones [forces organizations to] focus on generating, acquiring, transferring and combining such assets to meet customer needs. In order to be successful in these activities, firms and their managements must be entrepreneurial." This implies, according to Teece, that knowledge-intensive, entrepreneurial firms must have:

- flexible boundaries,
- high-powered incentives,
- non-bureaucratic structures,
- shallow hierarchies, and
- an innovative and entrepreneurial culture.

In short, the following suggestions are made for the design of knowledge-intensive forms: reduce hierarchy,

only provide the basic outline of production structure, and transfer decisions to connect knowledge worker tasks from the formal to the informal organization structure. Note, however, that loosening control for knowledge work is a disputed issue (e.g., Butler, Price, Coates, & Pike, 1998).

Many of the proposed prescriptions for building knowledge-friendly organization structures (e.g., Quinn, 1992; Sanchez & Mahoney, 1996; Miles, Snow, Mathews, Miles, & Coleman, 1997) share with Teece's prescription a 'one-size-fits-all' character. The assertion that no single organization structure can be a panacea for all management ills, which underlies several organization theories (e.g., the contingency and configurational approaches; see Donaldson, 2001), seems to be fairly broadly accepted. Nevertheless, it appears to be weakly developed where organization structures for knowledge work are concerned. When authors do introduce contingencies (e.g., Nonaka & Takeuchi, 1997; Hobday, 2000), these are usually of a general nature (e.g., complexity or turbulence of the environment, analyzability of the task, size of the firm, type of technology), and not specifically knowledge related. The characteristics of an organization's knowledge base can also serve as contingency variables, as Birkinshaw, Nobel, and Ridderstrale (2002) show in a study of international R&D. Particularly the importance of system embeddedness, which is the extent to which knowledge is a function of the social and physical system in which it exists (Winter, 1987; Zander & Kogut, 1995), emerges from their study as an important contextual variable.

ORGANIZATIONAL STRUCTURE AND ORGANIZATIONAL KNOWLEDGE

Defining Organization Structure

In order to be able to assess the suitability of specific design advice for organizations from a knowledge perspective, we need to understand the denotation of the twin concepts of organization structure and organization design. The division of labor is the key concept underlying organization structure and design. When labor is divided among people and machines, the need also arises to integrate the tasks involved. These two elements, which Lawrence and Lorsch (Lawrence, Lorsch, & Garrison, 1967; Lawrence & Lorsch, 1969) identify as differentiation and integration, are generally recognized as the building blocks of organization structure. For instance, the definition of organization structure that Bowditch and Buono (1985, p. 258) give, which combines Mintzberg's (1979, 1983) well-known definition with the approach taken by Lawrence and Lorsch, states:

Organization structure can be broadly defined as the sum total of ways in which an organization divides its tasks and then coordinates them, in essence balancing job-related specialization (differentiation) with group-, intergroup, and organization-based coordination (integration) as appropriate.

Implied in any system of job definition are the relationships among the totality of tasks. Work relationships therefore define organization structure. A work relationship exists if and when the output of one task is used as part of the input of another task. Work relationships may be distinguished by their content or form. Regarding their content, two types of relationships are commonly discerned. Firstly, relationships exist within the production process (e.g., knowledge workers using the ideas or products of others as inspiration, or input, for their work). The pattern of these relationships defines what is commonly called 'the production structure'. Secondly, relationships can be discerned which affect the definition and realization of work relationships (e.g., knowledge workers deciding for themselves or being directed by a manager to use specific outputs as inputs). The pattern of these relationships is usually referred to as the control structure. As to their form, Thompson (1967) distinguishes three types of input-output connections or—as he calls them—three types of interdependencies: pooled (one actor receives input from multiple others), sequential (one actor transforms the output of an actor before passing it on as input for a third actor), and reciprocal interdependencies (two actors use each other's outputs as input).

The organization structure seen as patterns of work relationships concerns the content side of these relationships. Addressing issues of organization structure implies an abstraction from the personal elements in these relationships, such as individual preferences for work contacts, motivation, trust, and so forth. Obviously, such factors are important in the sense that they are affected by existing organization structures. They are also critical in the sense that they codetermine the success of organizational design choices. Therefore, fully understanding issues of organization structure is not possible when these are addressed in isolation.

From this account it follows that decisions of organization design fall into two basic categories. They concern: (1) either splitting or integrating tasks within production, and (2) either separating production from control or integrating production and control. Four archetypes of organization structures then appear situated on a continuum (see Table 1). The archetype of maximal splitting within production, combined with maximal separation of production from control, defines one end of the continuum (this describes the classical Tayloristic bureaucracy with its focus on specialization within production and elaborate