Chapter 8
Measuring Dynamic Knowledge Flows: Implications for Organizational Performance and Competitive Advantage

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ABSTRACT
Knowledge is key to sustainable competitive advantage, but different kinds of knowledge affect competitive advantage differently, and they exhibit qualitatively different dynamic properties and behaviors. This places particular importance on understanding the dynamics of knowledge as it flows from where and when it is to where and when it is needed. Despite the increasing analytical and explanatory power of Knowledge Flow Theory toward this end, the extant literature remains limited in terms of measurement. The research described in this chapter builds upon and extends Knowledge Flow Theory to conceptualize and illustrate a scheme for measuring dynamic knowledge flows. Such a scheme offers a theoretical contribution and elucidates an exciting path for continued research along these lines. It highlights practical application as well through enhanced managerial decision making and business value creation in the context of harnessing dynamic knowledge for competitive advantage.

INTRODUCTION
Knowledge is key to competitive advantage (Cole, 1998; Grant, 1996; Spender, 1996). Knowledge enables effective action; effective action drives superior performance; and superior performance supports competitive advantage (Nissen, 2006, ch. 1). Indeed, some scholars (Drucker, 1995) argue that knowledge represents the only sustainable source of competitive advantage. However, knowledge does not represent a single, monolithic concept (Nissen & Jennex, 2005). Different kinds of knowledge (e.g., tacit, explicit, individual, group, created, applied) have qualitatively different properties and behaviors and hence affect action, performance and competitive advantage differently (Nissen, 2005).

In particular, although explicit knowledge (Nonaka, 1994) can provide a basis for competitive advantage (Grant, 1996), such advantage is likely
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to be ephemeral. Unless explicit knowledge can be kept secret, competitors are likely to acquire it, to imitate the knowledge-based actions that enable performance superiority, and hence eliminate any competitive advantage based upon such knowledge (Dierickx, Cool, & Barney, 1989). Alternatively, tacit knowledge is more appropriable than explicit knowledge is; hence the knowledge-based actions that it enables are more difficult for competitors to imitate. Speaking generally, the more explicit that knowledge becomes, the lower its competitive potential becomes (Saviotti, 1998).

This places particular importance on understanding the dynamics of knowledge as it flows from where and when it is to where and when it is needed. Although dynamic, knowledge is distributed unevenly through the enterprise. It moves, clumps and accumulates noticeably within specific people (e.g., experts), organizations (e.g., R&D units), locations (e.g., headquarters) and times of application (e.g., shift changes). Capitalizing on this dynamic resource for enterprise performance and hence competitive advantage depends upon its rapid and reliable flows across such people, organizations, locations and times.

Despite the increasing analytical and explanatory power of Knowledge Flow Theory (Nissen, 2006) toward this end, the extant literature remains limited in terms of measurement. The dynamics of knowledge—particularly the kind of rich, situated, experience-based tacit knowledge that is prized for competitive advantage—are particularly difficult to conceptualize, much less quantify. Without the ability to measure the comparative speed and power of tacit versus explicit knowledge flows—across individual, group and organizational levels of reach and analysis—for instance, organizational leaders and decision makers have little science on which to decide how best to induce, guide and sustain knowledge flows through and between organizations.

The research described in this chapter builds upon and extends Knowledge Flow Theory to conceptualize and illustrate a scheme for measuring dynamic knowledge flows. Such scheme offers a theoretical contribution and elucidates an exciting path for continued research along these lines. It highlights practical application as well through enhanced managerial decision making and business value creation in the context of harnessing dynamic knowledge for competitive advantage. The balance of this chapter begins with background information on Knowledge Flow Theory and continues with an overview of this measurement scheme. We then incorporate numerical examples of knowledge flow measurement and explain how they contribute to enhance decision making. The chapter concludes with key findings, implications and future research directions.

BACKGROUND

Nissen (2005) describes the concept knowledge flows in terms of dynamic knowledge and indicates that it subsumes similar concepts such as knowledge conversion, transfer, sharing, integration, reuse and others that depict changes, movements and applications of knowledge over time. Knowledge Flow Theory (Nissen, 2006) describes the dynamics of knowledge flows phenomenologically, and it includes multidimensional, analytical and graphical techniques for understanding, interpreting and comparing a diversity of flows. Drawing directly from Nissen (2007), we organize this brief overview of Knowledge Flow Theory into four parts: (1) knowledge uniqueness, (2) knowledge flows, (3) knowledge dimensions and visualization, and (4) knowledge-flow analysis. Interested readers are directed to (Nissen, 2006) for details.

Knowledge Uniqueness

In this characterization, knowledge is conceptually distinct from information, data and signals: knowledge enables action (e.g., decisions, behaviors, work); information provides meaning
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