Chapter 11

Knowledge Management:
The Key to Delivering Superior Healthcare Solutions

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ABSTRACT

The proliferation of ICT (information communication technologies) throughout the business environment has lead to exponentially increasing amounts of data and information generation. Although these technologies were implemented to enhance and facilitate superior decision making, the result is information chaos and information overload; the productivity paradox (O'Brien, 2005; Laudon & Laudon, 2004; Jessup & Valacich, 2005; Haag et al. 2004). Knowledge management (KM) is a modern management technique designed to make sense of this information chaos by applying strategies, structures and techniques to apparently unrelated and seemingly irrelevant data elements and information in order to extract germane knowledge to aid superior decision making. Critical to knowledge management is the application of ICT. However it is the configuration of these technologies that is important to support the techniques of knowledge management. This chapter discusses how the process oriented knowledge generation framework of Boyd and the use of sophisticated ICT can enable the design of a networkcentric healthcare perspective that enables effective and efficient healthcare operations.

INTRODUCTION

Healthcare is an information rich, knowledge intensive environment. In order to treat and diagnose even a simple condition a physician must combine many varied data elements and information. Such multispectral data must be carefully integrated and synthesized to allow medically appropriate management of the disease. Given the need to combine data and information into a coherent whole and then disseminate these findings to decision makers in a timely fashion, the benefits of ICT to support decision making of the physician and other actors throughout the healthcare system are clear (Wickramasinghe *et al.*, 2006). In fact, we see the proliferation of many technologies such as

HER (health electronic records), PACS (picture archive computerized systems) systems, CDSS (clinical decision support systems) etc. However and paradoxically, the more investment in ICT by healthcare the more global healthcare appears to be hampered by information chaos which in turn leads to inferior decision making, ineffective and inefficient operations, exponentially increasing costs and even loss of life (Wickramasinghe et al, 2005; 2006). The reason for this lies in the essentially platform centric application of ICT to date within healthcare, which at the micro level do indeed bring some benefits but at the macro level only add to the problem by creating islands of automation and information silos that hinder rather than enable and facilitate the smooth and seamless flow of relevant information to any decision maker when and where such information is required.

To remedy this problem and maximize the potential afforded by ICT and consequently alleviate the current problems faced by healthcare, the adoption of a networkcentric approach to healthcare operations would appear to be prudent. Such a networkcentric approach is grounded in a process oriented view of knowledge generation and the pioneering work of Boyd (von Lubitz & Wickramasinghe, 2006ab; von Lubitz & Wickramasinghe; 2005; Boyd, 1987).

BACKGROUND: KNOWLEDGE CREATION

The processes of creating and capturing knowledge, irrespective of the specific philosophical orientation (i.e. Lockean/Leibnitzian versus Hegelian/Kantian), has been approached from two major perspectives; namely a people-oriented perspective and a technology-oriented perspective.

The People-Oriented Perspective

This section briefly describes three well known people-oriented knowledge creation frameworks: namely, Nonaka's Knowledge Spiral, Spender's and Blackler's respective frameworks. According to Nonaka (Nonaka, 1994; Nonaka & Nishiguichi; 2001): (1) Tacit to tacit knowledge transformation usually occurs through apprenticeship type relations where the teacher or master passes on the skill to the apprentice. (2) Explicit to explicit knowledge transformation usually occurs via formal learning of facts. (3) Tacit to explicit knowledge transformation usually occurs when there is an articulation of nuances; for example, as in healthcare if a renowned surgeon is questioned as to why he does a particular procedure in a certain manner, by his articulation of the steps the tacit knowledge becomes explicit and (4) Explicit to tacit knowledge transformation usually occurs as new explicit knowledge is internalized it can then be used to broaden, reframe and extend one's tacit knowledge. These transformations are often referred to as the modes of socialization, combination, externalization and internalization respectively (ibid).

Spender draws a distinction between individual knowledge and social knowledge (yet another duality), each of which he claims can be implicit or explicit (Newell *et al.*, 2002). From this framework we can see that Spender's definition of implicit knowledge corresponds to Nonaka's tacit knowledge. However, unlike Spender, Nonaka doesn't differentiate between individual and social dimensions of knowledge; rather he merely focuses on the nature and types of the knowledge itself. In contrast, Blackler (*ibid*) views knowledge creation from an organizational perspective, noting that knowledge can exist as encoded, embedded, embodied, encultured and/or embrained. In addition, Blackler emphasized that for different organizational types, different types of knowledge predominate, and highlights the connection between knowledge and orga-

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