Sharing and Managing Knowledge through Portals

Teemu Paavola
LifeIT Plc, Seinäjoki Central Hospital, Finland

INTRODUCTION

A Knowledge Management Approach

Any attempt to develop IT applications to manage information processes in a knowledge work setting will inevitably encounter the work of Ikujiro Nonaka (1991) on the importance of knowledge management in organizations. Almost all work can nowadays be loosely defined as knowledge work, since even ditch digging, for example, may involve the use of a GPS positioning device. Unwittingly establishing a doctrine of knowledge management, Nonaka took Polanyi's (1958, 1966) old definition of tacit knowledge as the starting point in his theory, and went on to describe the relationship between implicit and explicit (communicable) knowledge, and their importance within an organization.

A key conclusion in the work published by Nonaka and Takeuchi in 1995 was that tacit knowledge is important in the creation of new knowledge in organizations. As is commonly the case when new management theories are formulated, Nonaka and Takeuchi focused attention explicitly on a phenomenon that has always existed implicitly, but whose description or significance has not previously been encapsulated in such a way. The phenomenon to which Nonaka and Takeuchi drew attention was specifically the finding that knowledge used in an organization is divided into explicit and implicit knowledge, and that these are interlinked.

BACKGROUND

The Creation of New Knowledge

In their model, the creation of new knowledge is based on the conversion and circulation of explicit and tacit knowledge between the individual and the organization. Individuals share their internalized tacit knowledge by giving it a precise form of expression. This is then creatively combined with existing knowledge, and the newly learnt knowledge is internalized within the organization in the form of new practices. This model attempts to demonstrate, in simple terms, how, by repeating the chain of events described, a continuous spiral-like process emerges that enables the creation of new knowledge and innovations. For such a creative process to function well, it is necessary to have a suitable operating environment, of a kind originally described by Nonaka using the concept Ba, coined by philosopher Kitaro Nishida.

Nonaka and Takeuchi present an appetizing example of the harnessing of tacit knowledge for product development purposes, when they reveal a slice of the story behind an automatic home bread-making machine. In the 1980s, the Japanese Matsushita company wanted to develop a new product that would allow households to make top-quality bread themselves, easily and conveniently. The company experienced setbacks, however, in its development of the machine, and these were only overcome when a product development engineer investigated matters further with a master baker (a process that the theory terms *socialization*). In doing so, the engineer finally realized what was necessary to achieve the desired results: the dough had to be kneaded in a certain way, and this was a technique difficult to explain in words.

Commenting on the popularity of his theory, Nonaka has remarked that the more people talk about knowledge management, the more the concept is misunderstood. On a visit to Finland in 2000, he further declared that knowledge management is not a business management theory at all, not something that can be fashionable one day and forgotten the next, when a new trend comes along (Taloussanomat November 11, 2000). Instead of providing a new theoretical basis, he says knowledge management should be seen more as a new approach to organizations.

Information Richness Theory

The information richness theory of Daft and Lengel (1986) has traditionally formed the basis for studies of the interrelationship between information and the use of IT. The theory defines information richness as the capacity of information to change the recipient's understanding within a certain timeframe. According to the theory, the best channel for conveying the richest information is face-to-face communication. After this, the richness of the information exchanged declines in stages, from phone conversations and personal (e.g., letters) and then nonpersonal written documentation, to the most information-poor stage, namely documents containing numeric information. Although this division was created before the era of the Internet, multimedia, and

graphic interfaces, the theory that information richness varies between different media is still a valid one.

If the information richness theory and the knowledge creation spiral described are combined, the following research hypothesis emerges: that by improving the richness of its communication channels, an organization will be better placed to benefit from IT. The actual realization of this may not be so straightforward, however. Findings directly refuting this hypothesis are given later in this chapter.

The information richness theory can be also examined in terms of the Nonaka and Takeuchi spiral at a more detailed level. The question is whether each of the four transition stages of the spiral process can be connected in different ways with the opportunities for benefiting from IT. The importance of IT may be undisputed specifically at the stage of combining knowledge, but how significant is the use of IT in the other parts of the spiral process? Are the knowledge portals relevant for anything other than the assembly and dissemination of information? Can tacit knowledge be stored via the portals, and is it possible, anyway, to transmit tacit knowledge over computer networks?

Tacit Knowledge

Tacit knowledge is a concept often associated with skills acquired by master craftsmen of old. A London-based tea wholesaler, for instance, may still today be very much reliant on such tacit knowledge. Its master tea taster, trusted by all, may judge the quality of all batches arriving at the premises, and these decisions may form the basis for massive price differences from one tea consignment to another.

A number of different interpretations of the nature of tacit knowledge have been presented in the literature. Baumard (2001), for example, describes tacit knowledge as knowledge present in the very marrow of the individual, allowing him or her to make decisions intuitively, even in new situations. The divide between tacit and explicit knowledge has also been criticized as being artificial. For example, Tsoukas (1996) claims there are no grounds for such a two-way classification, as tacit knowledge can also be distributed verbally, if both parties are sufficiently versed in the matter, and correspondingly, the transfer of explicit knowledge is always accompanied by an element of tacit knowledge.

SHARING KNOWLEDGE THROUGH PORTALS

There is an interesting example of the role of knowledge portals in an organization's internal transmission of knowledge. Norwegian researcher Johannessen (Johannessen, Olaisen, & Olosen, 2001) and his colleagues point to the existence of an explanatory mechanism linking IT investments and corporate operating results, and that is based on the importance of tacit knowledge. They report that IT investments normally reinforce the flow of an organization's explicit knowledge and, correspondingly, weaken the importance of its tacit knowledge, and that, over time, this leads to a decline in innovation. Hence, the use of IT, they say, can have an adverse effect on corporate competitiveness in the longer run.

Johannessen et al. (2001) also present an example, though it is one that can be interpreted, in a different way, as partially countering their own conclusions. They present the case of a group of employees in a certain Norwegian shipyard, and report that the tacit knowledge of these employees became apparent to the benefit of the organization only when a new information system was introduced. The employees, working in one of the shipyard assembly units, raised objections to the introduction of some revised working practices, and expressed the desire to return to the previous arrangements. It also appeared that in this particular unit, this would actually be justified in production management terms, but the employees were not able to get their message through clearly to the management. Something was finally done only when a new information system was set up for the purpose of entering development ideas. One of the principles adopted for this new process was that the managers were not permitted to reject any idea out of hand, but had to first comment on the details submitted. The assembly unit employees were thus able to directly communicate their thoughts to management on something that was, until then, simply explicit knowledge within their own group, and it was not long before permission was granted for them to organize the work in the way they felt best.

Studying the role of information, Glazer (1993), for instance, has asserted that organizations with a strong focus on information management, rather than information technology, are likely to succeed better than others. E-mail can serve as a practical example of this. American professor Allen Lee believes that e-mail systems can be of most benefit to a company when the users are not seen as passive recipients of information, but as active processors of knowledge. The organization can then learn to use this ordinary information transmission channel in new ways, as outlined in the information richness theory. As Lee (1994, p. 155) notes, "Such a medium is one that becomes best or appropriate, over time, through its interactions with its users and through the users' adaptation or reinvention of the medium to suit their own purposes."

DISCUSSION AND CONCLUSION

The concepts of knowledge management play an increasingly important role in today's work environment. Theoretical consideration of the relationship between information system