



Integrating quality management practices with knowledge creation processes

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Abstract

Several quality thought leaders have considered the role of knowledge in quality management practices. For example, Deming proposed The Deming System of Profound KnowledgeTM that dealt explicitly with knowledge. However, various authors in the quality field diverge considerably when contemplating knowledge. We propose an integrated view of quality and knowledge using Nonaka's theory of knowledge creation. This integrated view helps illuminate how quality practices can lead to knowledge creation and retention. The knowledge perspective also provides insight into what it means to *effectively* deploy quality management practices. Previous empirical research noted the importance of effective deployment, but provided little insight into what effective deployment means. This research argues that quality management practices create knowledge, which leads to organizational performance. Taking a knowledge-based view (KBV) of the firm provides a deeper understanding of why some organizations are more successful at deploying quality management practices than others.

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1. Introduction

The Quality Management field increasingly searches for new ways to improve organizational performance. Taylor (1911) suggested improvement occurred by standardizing workers' tasks and providing incentives. Shewhart (1939) advanced the importance of understanding variation and the scientific method in performance improvement. Taguchi (1986) advocated the importance of product and process

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design in managing variation. Ishikawa (1985) promoted the use of teams or quality circles and the seven original tools of quality in performance improvement. Still others have emphasized a comprehensive systems view to improve organizational performance (Deming, 1986; Feigenbaum, 1991; Juran and Godfrey, 1999). These and other quality management practitioners seek to create change and improve organizational performance. After decades of various performance improvement initiatives, the question becomes what are the underlying processes that govern performance improvement? We propose that integrating quality management practices with organizational knowledge concepts can provide insights into how quality management lead to improved performance.

Most quality improvement activities require the creation of new knowledge for the organization. In fact, Deming (1994, p. 1) said that “best efforts and hard work, not guided by new knowledge, only dig deeper the pit we are already in”. This suggests that the understanding of knowledge should play a central role in understanding organizational improvement activities. The early founders of quality management were influenced by the role of knowledge in improvement activities. Both Shewhart (1939) and Deming (1994) made references to C.I. Lewis, an American philosopher of epistemology. Lewis (1929) developed a theory of knowledge in probabilistic terms. At about the same time, academics were beginning to develop theories that challenged the traditional static views of truth. Heisenburg introduced the uncertainty principle, Einstein conceived the theory of relativity, and quantum mechanics was beginning to develop—all these theories suggested a probabilistic view of truth was required. Lewis developed philosophical justification for a probabilistic notion of truth. Shewhart and Deming were probably deeply moved by these theories since they received their Ph.D. in physics about this time. Deming, a protégé of Shewhart, was later credited with conveying Lewis’s views in more concrete terms that could be understood by practitioners (Cunningham, 1994). This historic perspective suggests that knowledge played a critical role in the early development of quality management. Yet the link between quality management and knowledge has not been fully developed in concrete terms. There has

been little academic research connecting organizational knowledge and quality management. For example, Ahire et al. (1995) and Sousa and Voss (2002) provide comprehensive literature reviews of the quality management literature, but did not identify any papers that relate quality management to knowledge. This paper provides a basis for understanding the connection between quality and knowledge, and from a knowledge perspective develops insights into how effective deployment of quality management practices lead to improved performance.

The next section reviews knowledge and quality from the viewpoint of various academics and quality thought leaders, and discusses prior research in relating quality to firm performance. We then develop an integrated perspective of quality management practices and Nonaka’s theory of organizational knowledge creation. Based on the proposed integrative theory we then discuss propositions for future testing and implications for practitioners. Finally, we draw conclusions and discuss the importance of considering both quality management and knowledge when improving organizational performance.

2. Knowledge perspectives of quality management

2.1. Academic literature of quality and knowledge

Only recently have academics begun to relate knowledge to quality management. The early work used analytic models to understand the relationship between quality and learning. Fine (1986) conducted one of the first studies that related quality and learning. He developed an analytical model that studied the relationship between failure cost and conformance cost, and found that the optimal quality level increases over time due to learning. Other analytical studies range from the examination of the effect of learning on quality control (e.g. Dada and Marcellus, 1994; Tapiero, 1987) to the use of more complex models incorporating learning curves and pricing (e.g. Hatch and Mowery, 1998; Li and Rajagopalan, 1998; Zangwill and Kantor, 1998).

Some researchers have also developed conceptual or theoretical works that relate quality to knowledge. Sitkin et al. (1994) argued that traditional TQM has overemphasized quality control, which is not suitable

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