

Chapter 4.3

IT–Based Project Knowledge Management

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ABSTRACT

This chapter presents IT solutions supporting knowledge management initiatives within project organizations. The first section describes the background of the problem, that is the difficulty of managing knowledge in project-based organizations. The second section presents a model of knowledge management as the activity of managing compromises on a number of dimensions, and uses this model to present IT solutions for project knowledge management. The last section discusses future trends and key challenges and focuses on knowledge representation.

INTRODUCTION

This chapter primarily deals with project management and more especially the increasing

tendency of modern organizations to use project organizations to carry out a range of vital operations or innovative activities. The use of project organizations is to be expected in industries for which this operating system is a necessity, e.g., the construction industry. The use of project management in these industries actually originated in the 1950s. However, the use of projects can now be observed across all industries, for new product development or for business performance improvement. This means that in today's economy the leverage of project performance on overall business performance keeps intensifying.

This chapter discusses project management from a knowledge management perspective. The concept of knowledge management, initially popularized by Nonaka (1991), has been quickly adopted by the business and communities at large; see Despres and Chauvel (1999) for a discussion of the rising popularity of the topic. This suggests

that knowledge management is also a managerial approach which is here to stay.

The goal of this paper is to discuss IT applications, present and future, designed for project knowledge management. Capitalizing on existing knowledge for greater profitability is nothing novel: It has been implemented through management science since the dawn of the industrial revolution. This approach has only been possible in business sectors where operations can be highly routinized and can be improved in small steps. In the volatile and uncertain environment of project organizations, complexity has blocked such an effective management of knowledge.

BACKGROUND

Micro-Scale Knowledge Management

This chapter deals with the management of knowledge within and across project teams. The research approach used by the authors was to analyze the problem of project knowledge management at the operational level. In other words, this chapter does not discuss how to design a knowledge strategy and what kind of top commitment is necessary from top management. This is consistent with the school of micro knowledge management (μ KM) as defined by Vergison (2000):

- Micro-scale knowledge management focuses on the capture, structuring and use of knowledge at a local level and does not necessarily require strong management support. It is not very sensitive to strategic plan variations.
- Macro-scale knowledge management is very sensitive to company strategic plans and it deals with knowledge flows within a large business entity. It definitely requires strong top management support and commitment.

As described by Vergison (2000) the micro-scale approach is based on the assumption that a top-down approach to knowledge management is rather ambitious and exposed to implementation problems. Thus, the goal of this chapter is to identify generic micro knowledge management problems faced by project teams and to describe what type of IT solutions have been or may be developed. This is not to say that any μ KM problem can be solved with IT: In this chapter, many of the problems evoked can only be dealt with by using organizational design techniques. The goal of this paper is show how IT solutions can either solve some problems or facilitate the process of solving them.

Job Context and Complexity of Managing Knowledge

Since its inception, knowledge management has already gone a long way and many models have been formulated. However most models, solutions, and techniques in knowledge management are either presented at the macro-scale level or in job contexts that are different from those encountered by project teams.

The typology of job design systems proposed by Leseure and Brookes (2000a) illustrates the criticality of the second point. Figure 1 indicates which job design theories are most appropriate when the context of knowledge usage is changing. The arrows indicate which job design practices are likely to be appropriate when one moves in a specific direction.

In this model, the technical interdependence of tasks and the environmental uncertainty of the task environment are combined to define the vertical contextual variable: the required frequency of knowledge interactions. Technical interdependency creates the background for knowledge interaction. Environmental uncertainty adds a time (frequency) dimension and controls how often these interactions need to take place.

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