

Chapter 18

Enhancing Information Retrieval Capabilities of Knowledge Management Systems

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ABSTRACT

User support services face complex problems in the efficient and satisfactory delivery of services to users. Knowledge management (KM) principles can be effectively implemented within this organizational context to support efficient and effective problem solving to improve service delivery to the users. A KM system with good information retrieval capabilities is critical in empowering front line employees to utilize organizational knowledge repositories for better service delivery. The purpose of this chapter is to present different aspects of the major information retrieval techniques that can be used in a user services environment and to propose new models to enhance retrieval capabilities of KM systems. The authors discuss the basic elements that make up an information retrieval system including metadata, controlled, and uncontrolled vocabularies. The authors also propose three experimental search interfaces for enhancing information retrieval capabilities of a KM system. The first uses a thesaurus for enhanced retrieval features through better query formulation and browsing of search results; the second uses the tag cloud concept to present thesaurus terms; and the third combines the structure of a controlled vocabulary with the flexibility of a folksonomy and tag cloud, thus incorporating the beneficial aspects of both uncontrolled and controlled vocabularies to support retrieval within a heterogeneous corporate environment.

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INTRODUCTION

Users require support from their service providers for multiple reasons such as assistance in purchasing and support for resolving problems. Organizations typically aim to provide quick and efficient service to their customers/users, however organizations are facing increasing pressures such as large numbers of (problem resolution) calls, high employee turnover, escalation in employee training costs, (Chan, et al., 2000) and ineffective and inefficient re-use of the knowledge base, created from previously resolved cases, to provide solutions to their customers. Organizations are working to overcome some of these challenges by encouraging customer support staff to use the organizational knowledge resources for better service to the customers as well as by empowering the customer with appropriate self help options. In both scenarios, it is important that the customer support staff and the customers are able to efficiently and effectively use the knowledge base for problem solving. However the challenge in using an organizational knowledge base is the retrieval of relevant information when required by both the customer and the support staff. This chapter focuses on the importance of organizing and retrieving information within the context of knowledge management (KM) practices and elaborates on the use of different tools and strategies to aid in the organization and retrieval of information from knowledge repositories by users of information technology help support services with a focus on the emerging phenomenon of social tagging and tag clouds.

In this chapter we will first provide an overview of the importance of user services (or help desk support services) and discuss the problems facing user support services, and how the principles of knowledge management can be implemented within these contexts to support efficient problem solving. The next section will describe the importance of information retrieval in a KM system as this is the critical feature that

extracts relevant information from organizational knowledge repositories for the user to support their work-flow. The chapter then describes metadata, controlled, and uncontrolled vocabularies as methods of information organization that support retrieval in KM systems and discuss the benefits and problems inherent in each approach. Throughout this chapter three experimental search interfaces are discussed that have the potential to enhance information retrieval capabilities in a KM system. The first two are discussed briefly in the controlled vocabulary section and the third is presented in detail in the uncontrolled vocabulary section along with a discussion of social tagging and folksonomy.

AN OVERVIEW OF USER SERVICES

Providing appropriate service to customers or users (the terms are used interchangeably in this chapter) is an important component of any business and the majority of organizations strive to provide excellent service to their customers. The role of the user services or help desk (the terms will be used interchangeable in this chapter) is to provide support and help to users by providing information about the operation of products as well as resolving problems encountered by the user (Göker & Roth-Berghofer, 1999) in the continuous operations of the product (i.e., providing support for problem resolution). Marcella and Middleton (1996) define the help desk as “an accessible service point” (p. 4) that gives solutions on request to solve users’ or help seekers’ problems. Support services can be broadly classified into two types: *internal support systems* (i.e., providing support to the users within an organization) and *external support systems* (i.e., providing support to external customers) (Gonzalez, et al., 2005) depending upon the type of customer they support. There are a number of channels (e.g., telephone based support services, email-based help desk system, etc.) called “touch points” for the customer to

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