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EXPLAINING AND ALLEVIATING INFORMATION MANAGEMENT INDETERMINISM: A KNOWLEDGE-BASED FRAMEWORK

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Abstract—Our research attempted to identify the nature and causes of information management indeterminism in an online research environment and to propose solutions for alleviating this indeterminism. We conducted two empirical studies of information management activities. The first study identified the types and nature of information management indeterminism by evaluating archived texts. The second study focused on four sources of indeterminism: subject area knowledge, classification knowledge, system knowledge, and collaboration knowledge. A knowledge-based design for alleviating indeterminism, which contains a system-generated thesaurus and an inferencing engine, is also proposed in this article.

1. INTRODUCTION

Information management activities have for decades been the focus of research interests in various disciplines including Behavioral Science, Management Information Systems, and Information Science. In Behavioral Science, Simon's theory of "intelligence," "design," and "choice" has been taken as the model of rational decision making (Simon, 1960). Researchers in these areas have postulated that effective information collection and hypothesis generation and testing are the basis for making rational decisions (Simon, 1947, 1960).

In Management Information Systems, Huber has stressed the role of environmental scanning, information filtering and collection, and system-supported decision aids for achieving effective organizational decision making (Huber, 1974, 1979). Design criteria for Decision Support Systems have been suggested. This type of system creates a repository of important management-related information, and provides statistical and knowledge-based models for assisting high-level decision making. A variant of Decision Support Systems, called Computer-Assisted Research Systems (CARS), is intended to facilitate information collection, management, and retrieval; to support hypothesis generation and analysis; and to assist document preparation during the research process.

Although researchers in Behavioral Science and Management Information Systems acknowledge the importance of information and computer systems, it is information scientists who examine the activities of information management and retrieval in much closer detail. Prior research in the areas of information indexing and retrieval has provided important insights into understanding the processes of indexing and retrieving unknown and unstructured information.

Building on prior research in information indexing indeterminism, we attempted to investigate in detail the problems of information management indeterminism in an online research setting. We aimed at identifying the nature and types of information management indeterminism and the systematic causes that contribute to this indeterminism. Some findings are unique in the CARS environments. There are, however, some results that