Chapter IX

Data Mining for Business Process Reengineering

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ABSTRACT

Transitioning from a mining to meaning perspective in organization data mining can be a crucial step in the successful application of data mining technologies. The purpose of this paper is to examine more fully the implications of that shift. The use of data mining technology was part of our cycle time study of the Poplar County Criminal Justice System (a fictitious name). In this paper we will report on the use of data mining in the Poplar County Criminal Justice System (PCCJS) study in an attempt to speed up their case handling processes. Marketing and finance researchers are more involved with “simple” (i.e., direct) relationships, whereas BPR researchers are more concerned with long chains of interacting processes.
This difference appears in the tools these researchers use: marketing and finance researchers are more interested in set-theoretic problems, BPR researchers, in graph-theoretic problems. Yet data mining technologies incorporate graph-theoretic algorithms. Consequently, they should be able to support hypothesis generation in BPR activities. We were able to come up with relevant and meaningful hypotheses for BPR in the PCCJS system by using data mining technology, specifically sequential pattern analysis: “Which areas we should look into in order to speed up the case handling process?” This valuable outcome would have not been possible without data mining technology, considering the large volume of data on hand. It is hoped that this study will contribute to broadening the scope of applicability of data mining technology.

INTRODUCTION

The terms data mining and knowledge discovery conjure up images of miners searching for gold or explorers seeking an unknown continent. Those images can be powerful, yet misleading, in that they strongly suggest that those using data mining tools have a clear picture of where and for what they are looking. More explicitly, those images of knowledgeable searchers imply the existence of two types of knowledge, which may not necessarily be true for data mining tool users: 1) a set of clues or “signs” that act as inputs to 2) a set of decision rules that process the clues into desired outcomes. For example, expert gold miners have a knowledge base of important signs and rules that allow them to distinguish gold ore from pyrite (“fool’s gold”).

Data mining in organizational environments, on the other hand, is conducted in human social contexts. This environment is vastly more complex and subtle than the mechanistic, engineered world of the miner. This difference is significant, in that many of the signs encountered in the human world of data mining activities are often equivocal, and the decision rules are more heuristic. “Mining” for patterns in organizational databases is thus more like mineralogical, or, better yet, archeological research, in which the relationships between data are fuzzy, messy, equivocal, or unknown.

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