Knowledge-Driven Decision Support System based on Knowledge Warehouse and Data Mining for Market Management

Dr. Murtadha M. Hamad, Banaz Anwer Qader

Abstract

Over the recent years, a great interest has appeared in studying "knowledge warehouse (KW), decision support system (DSS), data mining (DM), and knowledge discovery process in database (KDD)", taking into consideration that each of these fields is related to and influenced by the others. In order to manage an enterprise resources, there is a necessary need to build a DSS which helps the manager or the decision maker in the decision making and managing processes. While the primary goal of a (KW) is to provide the decision-maker with an intelligent analysis platform that enhances all phases of the knowledge management process, the (KDD) process should be applied to discover knowledge and build (KW), where (DM) technique is considered the most important step in the process (KDD). So in this paper, we merged the concepts of data warehouse (DW) and knowledge warehouse (KW) proposing and building a system of kind (knowledge-driven DSS) which depends on KW for managing (storing and retrieving) the knowledge for the benefit of the process of decision making and management of the market resources (items), where this study includes an application on a DW of marketing building resources (items). This study uses the data mining technique specifically its functionality (Association Rules Mining) in the knowledge discovery process and building KW. Eventually, the designed system was constructed and executed by using (C# version 2008) which is a visual and object oriented programming language. Good system results (knowledge) were obtained in a very little time taking two minutes approximately. This proves the efficiency of the proposed algorithms and our knowledge-driven DSS system in the supporting the market manager or decision maker to take accurate and right decisions for managing the market items in a perfect way.
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Data mining is supported by three technologies namely data mining algorithms, massive data collection, and powerful multiprocessor computers. The developments of these technologies have been in place for many years, in areas of research such as machine learning, statistics, and artificial intelligence. Decision support systems are also called knowledge based system because of their attempt to make domain knowledge formal and amenable to mechanized reasoning (Daniel, 2002). Decision support systems are information systems that computer bases. They have turned to data mining for support. Data mining enhances disease management, resource utilization, and physician practices in health care.