

Chapter 16

Enterprise Information System and Data Mining

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ABSTRACT

The advent of information technology and the consequent proliferation of information systems have lead to generation of vast amounts of data, both within the organization and across its supply chain. Enterprise information systems (EIS) have added to organizational complexity, and at the same time, created opportunities for enhancing its competitive advantage by utilizing this data for business intelligence purposes. Various data mining tools have been used to gain a competitive edge through these large data bases. In this paper, the authors discuss EIS-aided business intelligence and data mining as applicable to organizational functions, such as supply chain management (SCM), marketing, and customer relationship management (CRM) in the context of EIS.

INTRODUCTION

One of the most obvious and compelling business trends today is globalization – of corporations, markets, and competition. The consequent internationalization of operations has made it imperative for the integration of suppliers, partners, and

customers across geography with an objective to achieve integrated supply chains. There is mounting pressure on enterprises, from customers and suppliers, for a direct move away from disparate systems operating in parallel towards an integrated and more common shared architecture. Managers spend a large portion of their time scanning information and rely on external sources for the information they need for decision making

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(Vedder, Vanecek, Guynes, & Cappel, 1999). Enterprises are attempting to find ways to improve their flexibility and responsiveness and, in turn, their competitiveness through increased use of information technology (IT) (Davenport, 1998).

Early enterprise systems (ES) were not primarily focused on the whole enterprise. Their initial focus was to execute and integrate such internally-oriented applications that support finance, accounting, marketing and sales, manufacturing, and human resources. Today, many organizations have moved on to address the whole enterprise with their enterprise information systems (EIS).

An enterprise information system is a tool that supports a variety of decisions by decision makers across the organizations at disparate locations, even in different countries. Enterprise information systems provide the information infrastructure critical to the business processes of an enterprise with the objective of achieving efficiency, competency, and competitiveness (Mcafee, 2002). The EIS helps an enterprise to catch, process, store, and distribute information for business intelligence (BI) and management decision making. Examples of EIS's include relational databases, enterprise resource planning (ERP) systems, mainframe transaction processing systems, and legacy database systems.

The EIS integration problem has assumed great importance because enterprises are striving to leverage their existing systems and resources while adopting and developing new technologies and architectures. Today, enterprise application development is more about integration rather than developing an enterprise application from scratch. Enterprises cannot afford to discard their existing investments in existing applications and EIS. The EIS integration problem is one part of the broader scope of enterprise application integration (EAI). EAI entails integrating applications and enterprise data sources so that they can easily share business processes and data (Irani, Themistocleous, & Love, 2003).

EIS AND BUSINESS INTELLIGENCE

Over the last decade, the global business environment and its accompanying complexities has necessitated the use of BI tools. Comprehensive and timely information is a must for new product development and improving business operations. BI plays a crucial role in providing a sound DSS for operative and strategic decision making (Hanula & Pirttimaki, 2003).

Business intelligence can be defined as a process of acquiring, interpreting, collating, analyzing and exploiting information for business competitiveness (Chung, Chen, & Nunamaker Jr, 2005). Some of the tools used for business intelligence purpose and are discussed in this paper are: OLAP (Online Analytical Processing), and data mining.

Business intelligence (BI) has benefitted from the EIS and utilizes it to analyze huge amounts of data for making better decisions regarding customers, suppliers, supply chain, and infrastructure. Whereas EIS lays the technological platform to integrate various systems and coordinate business processes, BI is a data driven decision support system (DSS) that combines data gathering, data storage, and knowledge management with analysis for better managerial decision making. The primary objective of both is to support sound decision making.

EIS Infrastructure

The data warehouse is one of the most rapidly growing areas in management information systems. A data warehouse offers an integrated view on all business-relevant data, and, thus, provides the data foundation upon which an enterprise-wide information system can be based. With this approach, data for EIS and DSS applications are separated from operational data and stored in a separate database called a data warehouse. Data warehouses provide large-scale caches of historic data useful for BI. They sit between information

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