Abstract

Nowadays automated data collection tools and mature database technology lead to tremendous amounts of data stored in databases, data warehouses and other information repositories in business organizations. In this paper, a novel approach of developing a decision support system using on-line analytical processing (OLAP) is presented. The OLAP application is optimal for data queries that do not change data. The system database is designed to promote: heavy indexing to improve query performance, denormalisation of the database to satisfy common query requirements and improve query response times, and use of a star-snowflake schema to organize the data within the database. The existing partitioning strategy is used to partition the fact table by time into equal segments, different-size segments and on different dimension of data warehouse, which provide the good query performance, optimize hardware performance, and simplify the management of the data warehouse by reducing the volume of data to satisfy a query. Entity-relation modeling is used to create a single complex model, which proven effective in creating efficient online transaction processing systems. In this system, cubes are used to organize and summarize data for efficient analytical querying. In addition, an
enterprise information system model has also been presented in this paper in order to optimize
the utilization of operational data for use strategically. The proposed system is evaluated on the
cube data for the Rajshahi and Khulna regions for ten years from 1994 to 2003. Experimental
results indicate the effectiveness of the proposed OLAP based Decision Support System.

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Index Terms

Computer Science, Information Sciences

Keywords

Data Analytics, Dimension data, DSS, Fact Table, OLAP