Bicol University
Bicol University Polangui
Polangui, Albay

National Bookstore Inventory Management System

Information Management

Kyla Shaina Layosa
Kristina Paula Alamil
Shane Yvette Penaflor
Lovely Irish Benoyo
Akisha Miel Reomalis
Nicole Anne Bellen

BSIS-2B

The Business Intelligence (BI) portion of the National Bookstore Inventory Management System was implemented with a star schema design, where the core fact table `fact_sales` is related to three principal dimensions: `dim_users`, `dim_time`, and `dim_items`. The design accommodates complex analytical queries that return insightful information about sales performance, staff activity, and inventory trends. Five complex SQL queries were run to retrieve useful business data from the database.

The first question involved summing total sales monthly by rolling up `total_price` from the `fact_sales` fact table and grouping by year and month along the `dim_time` dimension. This revealed the seasonal trends of demand from the customers, which can be used by the business to plan for high seasons like back-to-school months and holiday periods. The second question listed the best-selling products by adding up the amount sold from the `fact_sales` table and aggregating by item name in the `dim_items` table. This information is essential in decision-making on what products to stock up on, bundle, or promote.

Another significant query looked at sales by administrator by rolling up sales information by the `username` in the `dim_users` dimension. This enabled the company to analyze employee performance, detect high performers, and spot any inefficiencies or anomalies. A fourth query, although not based on the star schema itself, was employed to identify low-stock items within the operation tables (e.g., `books` and `school_supplies`) by filtering for products less than a defined stock amount. This is a prevention measure against stockouts and maintaining product availability. The fifth question compared monthly sales patterns by item type, allowing the company to track category performance over time and make marketing strategy or procurement plan adjustments accordingly.

Based on these questions, some strategic business decisions can be made. Inventory forecasting can be enhanced by determining high-demand periods and best-selling products. Sales trends by item types can inform product expansion or contraction. Admin performance data supports better workforce management, and low-stock reports ensure operational readiness. To effectively visualize and track these insights, a dashboard is recommended. The best dashboard components are a line chart of monthly sales patterns, a bar chart of best-selling products, a pie chart of sales by product type, a table or heatmap of staff performance, a low-stock alert widget, and KPI cards of real-time measures such as total revenue or sales growth.

In short, the combination of a star schema and sophisticated SQL queries has turned raw data into actionable information. These results not only improve operational effectiveness but also facilitate data-driven decision-making in sales, staffing, and inventory management.