Week 6

Using Database Records for Business Intelligence

Graphical user interface

Description automatically generated

Databases store valuable records collected from daily business operations. This data can be turned into information that, when placed into a specific context, can be used to provide knowledge or insights to the business. Business intelligence is a strategy used to analyze information to reveal an organization's historical trends, current state, and future outcomes. The value of the database records lies in using those records to inform the organization. Dark data is data that the organization collects over time but never uses to inform decision-making, management planning, or strategic objectives development. Organizations that use behaviors that treat databases and information systems like "silos" do not perceive the benefit of learning from data at an organizational level. Each department focuses on the data that relates directly to that business unit and related operational relevance. A holistic system-wide view of the organization is not utilized to accomplish organizational learning and knowledge growth.

The RFM Analysis – Business Intelligence in Action

RFM stands for recency, frequency, and monetary. RFM is a type of segmentation used to place customers into groups based on purchasing behavior. Using this method, you analyze how recent customers have made purchases, how frequently they make purchases, and how much they spend in a specified period. A customer's lifetime value is based on a given customer's frequency and monetary value. Recency determines the extent to which your customer is engaged or whether you can retain that customer. It is important to understand that the principles behind segmentation can be applied to numerous use cases involving the need to group records based on specified criteria. This method of business intelligence is extremely valuable in gaining insight into various metrics important for solving business problems.

Figure 9

The Metrics Behind RFM Analysis



The Metrics Behind RFM Analysis

There are assumptions made based on how each customer scores in the factors R, F, and M. Customers who have engaged or placed a recent order are most responsive to marketing promotions and special offers. The more often a customer purchases, the more likely they are satisfied and engaged with your business. Spending amount groups customers into "budget shoppers" and "high spenders."

A Simple RFM Example

Let's assume you are starting the second quarter of the year, and you wish to analyze the first three months' data for the year. You can access the database, and run a query that creates a result with the CustomerID, OrderID, OrderDate. OrderAmount. This result gets stored in a table with a meaningful name (e.g., CustomerSales). Since the date range goes from January 1 to March 31, recency counts back from the analysis day in days to the last purchase. Frequency looks at how many times the customer purchased during the first quarter and monetary looks at how much they spent. The dataset shown in table 3 is needed to perform RFM analysis.

Table 3

Dataset Required for RFM Analysis

|  |  |  |  |
| --- | --- | --- | --- |
| **CustomerID** | **OrderID** | **OrderDate** | **OrderAmount** |
| **1002** | 500 | 1/18/2020 | 5000 |
| **1000** | 505 | 1/25/2020 | 750 |
| **1002** | 510 | 2/1/2020 | 500 |
| **1003** | 515 | 2/17/2020 | 2500 |
| **1005** | 520 | 2/20/2020 | 3500 |
| **1001** | 525 | 3/1/2020 | 4000 |
| **1000** | 530 | 3/15/2020 | 500 |

Each customer is scored on each factor by ranking them separately. This means that each customer receives a score for R, F, and M. Recency is ranked first with lower numbers being more favorable than higher numbers. Frequency and monetary are ranked in descending order with the higher numbers being more favorable. Using a ranking of 1-5, a score is assigned. Since this is a portion of the dataset, the scores reflect just the data shown here in table 4. A score of 5 is high and a score of 1 is low.

Table 4

Completed RFM Analysis

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Customer ID** | **Recency (R)** | **Frequency (F)** | **Monetary (M)** | **RFM Score** | **RFM Score AVG** |
| **1000** | 5 | 5 | 3 | 553 | 4.33 |
| **1001** | 5 | 3 | 5 | 535 | 4.33 |
| **1002** | 3 | 5 | 5 | 355 | 4.33 |
| **1003** | 4 | 3 | 3 | 433 | 3.33 |
| **1005** | 4 | 3 | 4 | 434 | 3.67 |

Once you know the score for each customer, the segment they belong to determines the next steps. For example, a business may decide to label customer segments as new customers, customers at risk, champions, potential loyalists, or ready to churn. Based on each customer group, a data-driven strategy is used to meet the needs of that group. Targeted marketing campaigns can be sent to specific customers, or special promotions can be offered to a select group of customers. Perhaps a specific sales group focuses on those customers likely to churn in an attempt to retain those customers, and another sales group works with new customers to increase loyalty. This is just one example of many that show how database records can be used for business intelligence.

Weekly Resources and Assignments

Review the resources from the Course Resources link in the top navigation bar to prepare for this week’s assignments. The resources may include textbook reading assignments, journal articles, websites, links to tools or software, videos, handouts, rubrics, etc.

This week, you learned about the use of relational database information for business intelligence purposes. In this assignment, you will use the RFM analysis sample scenario and related scripts in weekly resources and SQL Server Management Studio Express to write stored procedures with SQL statements to manipulate (query) the data that is present in the database for business intelligence purposes.

Part 1:

Using the SQL scripts for the RFM analysis provided in weekly resources, modify as necessary to create the necessary tables and stored procedures to conduct an RFM analysis using data in the Pets 'n Paws database.

Describe the process of modifying the scripts for each of the required elements in the RFM analysis. Include embedded annotated screenshots of the results of each part of the process.

Provide a copy of the modified sample RFM analysis SQL scripts as a ZIP file.

Part 2:

Describe different types of business intelligence acquired based on the spending behavior information in the Pets 'n Paws database.

* Provide answers to the following business intelligence questions with a clear explanation as to how this insight was determined:
* Which customers are your top customers (based on frequency and spending) and what RFM score do they have?
* Which customers are your bottom customers (based on recency) and what RFM score do they have?
* Which customers could be called "frequent flyers" and what RFM score do they have?
* Which customers are your "top spenders" and what RFM score do they have?
* Assuming a limited marketing budget, which set of customers should be included in your next marketing campaign?

Length: 5 to 7-page paper, plus 1 zip file of ready-to-execute SQL (.sql) files

References: Include a minimum of 2 scholarly resources.