**Khush Domadiya (fr9739)**

Lab 1: Dimensional Model Design

Name:

Identify the dimensions, and fact measurements based on the following description:

Question 1. One of the online retail company’s features is an e-wallet service, that holds credit that can be used to pay for products purchased on the platform.

Users can receive credit in three different ways:

(1). When a product purchase that is paid for is canceled, the money is refunded as cancellation credit.

(2). Users can receive gift card credit as a gift.

(3). If a user has a poor service experience, sorry credit may be provided.

Requirement

The Finance department of the company would like to build reporting and analytics on the e-wallet service so they can understand the extent of the wallet liabilities the company has.

Some of the questions they would want to answer from this are like below:

(1). What is the daily balance of credit in the e-wallet service?

(2). How much credit will expire in the next month?

(3). What is the outcome (i.e. % used, % expired, % left) of credit given in a particular month?

Step 1: What is the business process:

The business process is E-wallet service provided to customer for purchasing in this company.

Step 2: Define the grain:

Unit(lowest level) of analysis in the fact table (lowest grain)

One product purchased using e-wallet credits by one customer in one transcation

Step 3: Identify the Dimensions:

E-wallet, customer, products, payment method, date;

E-wallet DImension

|  |  |  |
| --- | --- | --- |
| Attribute | Attribute Description | Key |
| E-Wallter number | Surrogate key | Primary key |
| E-wallet ID | Natural key |  |
| Activation Date |  |  |
| Expiration Date |  |  |
| Initial Credit |  |  |

Customer Dimension

|  |  |  |
| --- | --- | --- |
| Attribute | Attribute Description | Key |
| Customer number | Surrogate key | Primary key |
| Customer ID natural key |  |  |
| Cutomer name |  |  |
| Customer address |  |  |
| Customer number |  |  |
| … |  |  |

Product dimension

|  |  |  |
| --- | --- | --- |
| Attribute | Attribute Description | Key |
| Product number | Surrogate key | Primary key |
| SKU number | Natural key |  |
| Product name |  |  |
| Product description |  |  |
| Category |  |  |
| … |  |  |

Payment dimension

|  |  |  |
| --- | --- | --- |
| Attribute | Attribute Description | Key |
| Payment method number | Surrogate key | Primary key |
| Payment type ID | Natural key |  |
| Type | Credit card, debit card, e-wallet, cash, check |  |
| … |  |  |

Date dimension

|  |  |  |
| --- | --- | --- |
| Attribute | Attribute Description | Key |
| Date key | YYYMMDD | Primary key |
| Date | Date format |  |
| Holiday or not |  |  |
| Weekend or weekend |  |  |
| … |  |  |

Step 4: Identify the Fact Tables

Quantity,

Regular Unit price,

Discounted Unit Price,

Regular Sales Amount = Quantity\*Regular Unit Price,

Discounted Sales Amount = Quantity\* Discounted Unit Price

Amount paid by e-wallet Credits,

Amount paid by other methods

|  |  |  |
| --- | --- | --- |
| Attribute | Attribute Description | Key |
| E-wallet number | (FK) | Part of the composite key, foreign key |
| Customer number | (FK) | Part of the composite key, foreign key |
| Product number | (FK) | Part of the composite key, foreign key |
| Date Key | (FK) | Part of the composite key, foreign key |
| Payment Type number | (FK) | Part of the composite key, foreign key |
| Promotion | (FK) | Part of the composite key, foreign key |
| Quantity |  |  |
| Regular unit price |  |  |
| Discounted Sales Amount |  |  |
| Regular Sales Amount |  |  |
| Discounted Sales Amount |  |  |
| Amount paid by e-wallet credits |  |  |
| Amount paid by other methods |  |  |

Step 5: Star Schema

Date

Dimension

1. Wallet Retail Fact Table

Product

Dimension

Customer

Dimension

E-Wallet

Dimension

Payment Type

Dimension

Promotion

Dimension

Question 2. The fictional Global Computing Company was established in 1990. Global Computing distributes computer hardware and software components to customers on a worldwide basis. The Sales and Marketing department has not been meeting its budgeted numbers. As a result, this department has been challenged to develop a successful sales and marketing strategy.

Various factors in Global Computing's current business point to a decline in sales and profits:

(1). Traditionally, Global Computing experiences low third-quarter sales (July through September). However, recent sales in other quarters have also been lower than expected. The company has experienced bursts of growth but, for no apparent reason, has had lower first-quarter sales during the last two years as compared with prior years.

(2). Global has been successful with its newest sales channel, the Internet. Although sales within this channel are growing, overall profits are declining.

Perhaps the most significant factor is that margins on personal computers - previously the source of most of Global Computing's profits - are declining rapidly.

Interviews with the VP of Sales and Marketing, salespeople, and market analysts at Global Computing reveal the following business analysis questions:

1. What products are profitable?

2. Who are our customers, and what and how are they buying?

3. What is the performance of each distribution channel?

Step 1: What is the business process:

Customer pwurchase products via different distribution channels using different types of payment methods.

Step 2: Define the grain:

One product being purchased by one cutomer via one distribution channel using one type of methods in one tranation at a particualr time;

Step 3: Identify the Dimensions:

Product dimension

|  |  |  |
| --- | --- | --- |
| Attribute | Attribute Description | Key |
| Product number | Surrogate key | Primary key |
| SKU number | Natural key |  |
| Product name |  |  |
| Product description |  |  |
| Category |  |  |
| … |  |  |

Customer Dimension

|  |  |  |
| --- | --- | --- |
| Attribute | Attribute Description | Key |
| Customer number | Surrogate key | Primary key |
| Customer ID natural key |  |  |
| Cutomer name |  |  |
| Customer address |  |  |
| Customer number |  |  |
| … |  |  |

Payment method dimension

|  |  |  |
| --- | --- | --- |
| Attribute | Attribute Description | Key |
| Payment method number | Surrogate key | Primary key |
| Payment type ID | Natural key |  |
| Type | Credit card, debit card, e-wallet, cash, check |  |
| … |  |  |

Promotion dimension

|  |  |  |
| --- | --- | --- |
| Attribute | Attribute Description | Key |
| Promotion key | Surrogate key | Primary key |
| Promotion type | Natural key |  |
| Type | Credit card, debit card, e-wallet, cash, check |  |
| … |  |  |

Date dimension

|  |  |  |
| --- | --- | --- |
| Attribute | Attribute Description | Key |
| Date key | YYYMMDD | Primary key |
| Date | Date format |  |
| Holiday or not |  |  |
| Weekend or weekend |  |  |
| … |  |  |

Distribution dimension

|  |  |  |
| --- | --- | --- |
| Attribute | Attribute Description | Key |
| Distribution key | Surrogate key | Primary key |
| Distribution ID | Natural key |  |
| Distribution Name |  |  |
| Description |  |  |
| Address |  |  |
| Phone Number |  |  |
| … |  |  |

Step 4: Identify the Fact Tables

Quantity,

Regular Unit Price,

Discounted Unit Price,

Unit Cost,

Regular Sales Amount = Quantity \* Regular Unit Price

Discounted Sales Amount = Quantit \* Discounted Unit Price

Cost - Quantit \* Unit Cost

Overall profit = Discounted Sales Amount - cost

|  |  |  |
| --- | --- | --- |
| Attributes | Description | Key |
| Distribution key | (FK) | Part of the composite key, foreign key |
| Product name | (FK) | Part of the composite key, foreign key |
| Promotion key | (FK) | Part of the composite key, foreign key |
| Paymnt method number | (FK) | Part of the composite key, foreign key |
| Customer number | (FK) | Part of the composite key, foreign key |
| Date key | (FK) | Part of the composite key, foreign key |
| Quantity |  |  |
| Discounted Unit Price |  |  |
| Regular Unit Price |  |  |
| Unit Cost |  |  |
| Regular sales amount |  |  |
| Discounted Sales amount |  |  |
| Cost |  |  |
| Overall Profit |  |  |

Step 5: Star Schema

Product dimension

Payement method dimension

Distribution Dimension

Promotion Dimension

Date Dimension

Customer Dimension

Global Computing Distribution Fact Table