

VIETNAM – KOREA UNIVERSITY OF INFORMATION AND  
COMMUNICATION TECHNOLOGY

**FACULTY OF COMPUTER SCIENCE**



**DATA WAREHOUSE COURSE PROJECT**  
**BUILDING DATA WAREHOUSE FOR**  
**SALE MANAGEMENT**

Students : **TRƯỜNG BÁ VƯƠNG**  
**NGUYỄN THÁI KHÁNH DUY**  
**PHÙNG ANH SANG**  
**NGUYỄN MẠNH TRƯỜNG DẠT**

Class : **21GIT**

Instructor : **ThS. TRẦN THANH LIÊM**

Da Nang, November 2023

VIETNAM – KOREA UNIVERSITY OF INFORMATION AND  
COMMUNICATION TECHNOLOGY

**FACULTY OF COMPUTER SCIENCE**



**DATA WAREHOUSE COURSE PROJECT**  
**DESIGN**  
**BUILDING DATA WAREHOUSE FOR**  
**SALE MANAGEMENT**

Students :                   **TRƯƠNG BÁ VƯƠNG**  
                                  **NGUYỄN THÁI KHÁNH DUY**  
                                  **PHÙNG ANH SANG**  
                                  **NGUYỄN MẠNH TRƯỜNG DẠT**  
  
Class       :               **21GIT**  
  
Instructor : **ThS. TRẦN THANH LIÊM**

Da Nang, November 2023

## **TEACHER'S COMMENT**

## ACKNOWLEDGEMENT

We would like to express my sincere gratitude to the university and the Faculty of Computer for their dedicated guidance, feedback, and support in helping us successfully complete our research project for the “Data Warehouse” course.

We are grateful to PhD. Tran Thanh Liem for his enthusiastic guidance throughout the process of preparing the research report.

During the course of our research project, We have made efforts and worked hard, but we understand that there may still be some shortcomings. We hope to receive valuable feedback from our professors and the evaluation committee to further improve and refine our research work.

*We sincerely thank you!*

# Table of content

<b>Table of content</b>	<b>1</b>
<b>Chapter 1: Introduction</b>	<b>4</b>
1.1 Data warehouse overview	4
Overall, a data warehouse empowers businesses and organizations to effectively collect, organize, and analyze data. It enables them to make informed decisions and discover valuable insights from their data.	
1.2 The significance of a research topic	5
1.3 Conceptual in Data warehouse	7
1.4 Tools	7
1.4.1 Visual Studio	7
1.4.2 SQL Server Integration Services	7
1.4.3 SQL Server Management Studio	8
<b>Chapter 2: Data Warehouse Analysis and Design</b>	<b>9</b>
2.1 Conceptual modeling	9
2.1.1 Attribute Description	9
2.1.2 Conceptual modeling diagram	10
2.2 Logical modeling	10
2.2.1 Description of dimension table attributes	10
2.3 Query question	13
<b>Chapter 3: Data Warehouse Development</b>	<b>15</b>
3.1 Physical modeling - SSMS	15
3.1.1 Dimensions table	15
3.1.2 Fact table	16
3.2 Star diagram - SSMS	18
<b>Chapter 4: ETL Process</b>	<b>19</b>
4.1 Conceptual ETL design	19
4.2 ETL development by using SSIS	19
4.2.1 Dim User	19
4.2.2 Dim Item	20
4.2.3 Dim Category	21
4.2.4 Dim OrderStatus	21
4.2.5 Dim Store	22
4.2.6 Dim Location	23
4.2.7 Dim Date	23
4.2.8 Fact Sale	24
4.2.9 Fact Sale By Store	25
4.3 SQL Task	26
4.3.1 Create SQL task	26
4.3.2 Execution SQL task	29
<b>Chapter 5: SSAS Process</b>	<b>30</b>
5.1 Prepare tools	30
5.2 Create Data Source View	31
5.2.1 Implementation process	31

5.2.2 Data Source View in SSAS	35
5.3 Create Cube	36
5.3.1 implementation process	36
5.3.2 Cube in SSAS	38
5.4 Edit dimension tables	40
5.4.1 Add attributes	40
5.5 MDX Query	43
5.5.1 Total daily revenue of the store by status	43
5.5.2 Top 5 Stores with the Highest Sales Volume and Revenue	44
5.5.3 Total Number Of Category Sold	45
5.5.4 Number of order by gender of the customer	46
5.5.5 Top 10 Sales Days with the Highest Total Revenue	47
5.5.6 Top 10 Cities with the Highest Number of Orders and Total Revenue	47
5.5.7 Top 10 Days With The Most Sales By Store	49
5.5.8 Top 5 Districts With The Highest Total Number Of Orderdetails	49
5.5.9 Top 10 Addresstext Days With The Highest Selling Price Ever	50
5.5.10 Number Of Genders Of Shoppers In City And Region	50
<b>Chapter 6: SSRS Process</b>	<b>51</b>
6.1 Prepare tools	51
6.2 Implementation process	51
6.2.1 Connect to Database	51
6.2.2 Create Report	52
6.3 Reports	54
6.3.1 Total revenue per day by status	54
6.3.2 Top 5 Stores with the Highest Sales Volume and Revenue	55
6.3.3 Total Number Of Category Sold	57
6.3.4 Top 10 people with the most total purchases over each day	58
6.3.5 Top 10 Cities with the Highest Number of Orders and Total Revenue	59
6.3.6 Number of items sold per day by the store	60
6.3.7 Top 10 types of products that most people buy every day	61
6.3.8 Top 10 best-selling items by store	62
<b>Chapter 7: Conclusion</b>	<b>63</b>
7.1 Conclusion	63
7.1.1 Achievements	63
7.1.2 Limitations	63
7.2 Development	64

## Chapter 1: Introduction

### 1.1 Data warehouse overview



**Figure 1-1 Data Warehouse**

A Data Warehouse is a specialized system that stores and manages data from multiple sources with the purpose of facilitating analysis and decision-making. It serves as a dedicated and optimized database for retrieving and analyzing data.

The key components of a data warehouse include:

- **Source Data:** This refers to data that is collected from various sources such as transactional systems, databases, data files, or external services. The data can be in different formats, including unstructured or structured.
- **ETL Process (Extract, Transform, Load):** The ETL process involves extracting data from the source, transforming and cleaning it to conform to a standardized structure, and loading it into the data warehouse. This process includes tasks such as data extraction, cleansing, merging, transformation, and building data blocks (data marts) for analytical purposes.
- **Data Storage:** The data is stored in the data warehouse using a specific structure, typically a star schema or snowflake schema. It is organized into dimension tables and fact tables, which enable efficient data querying and analysis.
- **Analytical Tools:** The data warehouse provides organized and optimized data that can be accessed and analyzed using various analytical tools. These tools include OLAP (Online Analytical Processing), complex SQL queries, reporting, visualization, and data mining tools.
- They help users explore information, generate reports, assess performance, and make predictions based on the data.

Overall, a data warehouse empowers businesses and organizations to effectively collect, organize, and analyze data. It enables them to make informed decisions and discover valuable insights from their data.



## 1.2 The significance of a research topic

### Reasons for Choosing the Topic "Design Sales Management Data Warehouse":

- **Business Criticality:** Sales management stands as the lifeblood of enterprises across industries. Crafting a dedicated data warehouse for sales management holds immense importance in facilitating informed decision-making, performance evaluation, and strategic alignment in sales operations.
- **Data Complexity:** Sales data is inherently intricate, encompassing diverse dimensions such as product categories, geographic regions, customer segments, pricing structures, and historical trends. A purpose-built data warehouse tailored for sales management simplifies the intricacies of this data, enabling comprehensive analysis and streamlined access.
- **Integration of Data Sources:** Sales-related information originates from multiple sources including CRM systems, sales platforms, marketing databases, and financial records. A specialized data warehouse amalgamates these disparate sources, delivering a unified, comprehensive view of sales data for efficient analysis.
- **Enhanced Performance:** The strategic design of a sales management data warehouse optimizes query performance and reporting efficiency. Through data aggregation and calculated metrics, the warehouse significantly improves query response times, thereby enhancing overall system performance.
- **Decision-Support Capabilities:** A meticulously designed sales management data warehouse empowers sales leaders and decision-makers with crucial insights. It facilitates the monitoring of sales performance, assessment of targets, analysis of customer behaviors, identification of high-performing products or regions, and data-backed decision-making for refining sales strategies.
- **Scalability and Adaptability:** With business growth, the volume and complexity of sales data expand exponentially. A scalable and adaptable data warehouse architecture ensures seamless scalability and flexibility, adapting to evolving business requirements in sales operations.
- **Foundation for Business Intelligence:** The creation of a sales management data warehouse forms the cornerstone for implementing robust business intelligence and analytics initiatives. It facilitates advanced analytics models like predictive sales forecasting, customer segmentation, and profitability analysis, enabling organizations to optimize sales processes and gain a competitive edge.

In focusing on the design of a sales management data warehouse, organizations can effectively address the unique challenges and intricacies associated with sales data. This initiative empowers businesses with actionable insights, enabling them to drive sales performance, enhance operational efficiency, and elevate customer satisfaction.

## **1.3 Conceptual in Data warehouse**

### **1.3.1 Dimension**

A dimension is a structure that categorizes facts and measures in order to enable users to answer business questions.

### **1.3.2 Fact**

A fact in data warehousing describes quantitative transactional data like measurements, metrics, or the values ready for analysis. These include header numbers, order numbers, ticket numbers, transaction numbers, transactioncurrency, etc. The amount sold is a fact measure or a key performance indicator(KPI).

## **1.4 Tools**

### **1.4.1 Visual Studio**



**Figure 1-2 Visual Studio**

The Visual Studio IDE is a creative launching pad that you can use to edit, debug, and build code and then publish an app. Over and above the standard editor and debugger that most IDEs provide, Visual Studio includes compilers, code completion tools, graphic designers, and many more features to enhance the software development process.

### **1.4.2 SQL Server Integration Services**

SQL Server Integration Services is a platform for building enterprise-level data integration and data transformations solutions. Use Integration Services to solve complex business problems by copying or downloading files, loading data warehouses, cleansing and mining data, and managing SQL Server objects and data. Integration Services can extract and transform data from a wide variety of

sources such as XML data files, flat files, and relational data sources, and then load the data into one or more destinations. Integration Services includes:

- A rich set of built-in tasks and transformations.
- Graphical tools for building packages
- An SSIS Catalog database to store, run, and manage packages.

### **1.4.3 SQL Server Management Studio**

SQL Server Management Studio (SSMS) is an integrated environment for managing any SQL infrastructure. Use SSMS to access, configure, manage, administer, and develop all components of SQL Server, Azure SQL Database, Azure SQL Managed Instance, SQL Server on Azure VM, and Azure Synapse Analytics. SSMS provides a single comprehensive utility that combines a broad group of graphical tools with many rich script editors to provide access to SQL Server for developers and database administrators of all skill levels.

## Chapter 2: Data Warehouse Analysis and Design

### 2.1 Conceptual modeling

#### 2.1.1 Attribute Description

ID	Field name	Description	Type
1	EMAILUSER	Email of user	varchar
2	USERBIRTHDATE	User's birthday	date
3	USERGENDER	user's gender	varchar
4	USERNAME	User's name	varchar
5	ORDERDETAILID	Id of order	int
6	STATUS	Status of order	int
7	DATE	Date of order	date
8	ITEMNAME	Item's name	varchar
9	AMOUNT	Amount of item	int
10	UNITPRICE	Price of item	int
11	TOTALPRICE	Total price of item	int
12	PRICE	Price of item	int
13	CATEGORY1	Category of item	varchar
14	CATEGORY2	Category of item	varchar
15	CATEGORY3	Category of item	varchar
16	CATEGORY4	Category of item	varchar
17	ADDRESS	Address of store	varchar
18	STORE	Store have item	varchar
19	REGION	Region have store	varchar
20	CITY	City have store	varchar

21	DISTRICT	District of store	varchar
22	ADDRESSTEXT	Address text of store	varchar

### 2.1.2 Conceptual modeling diagram

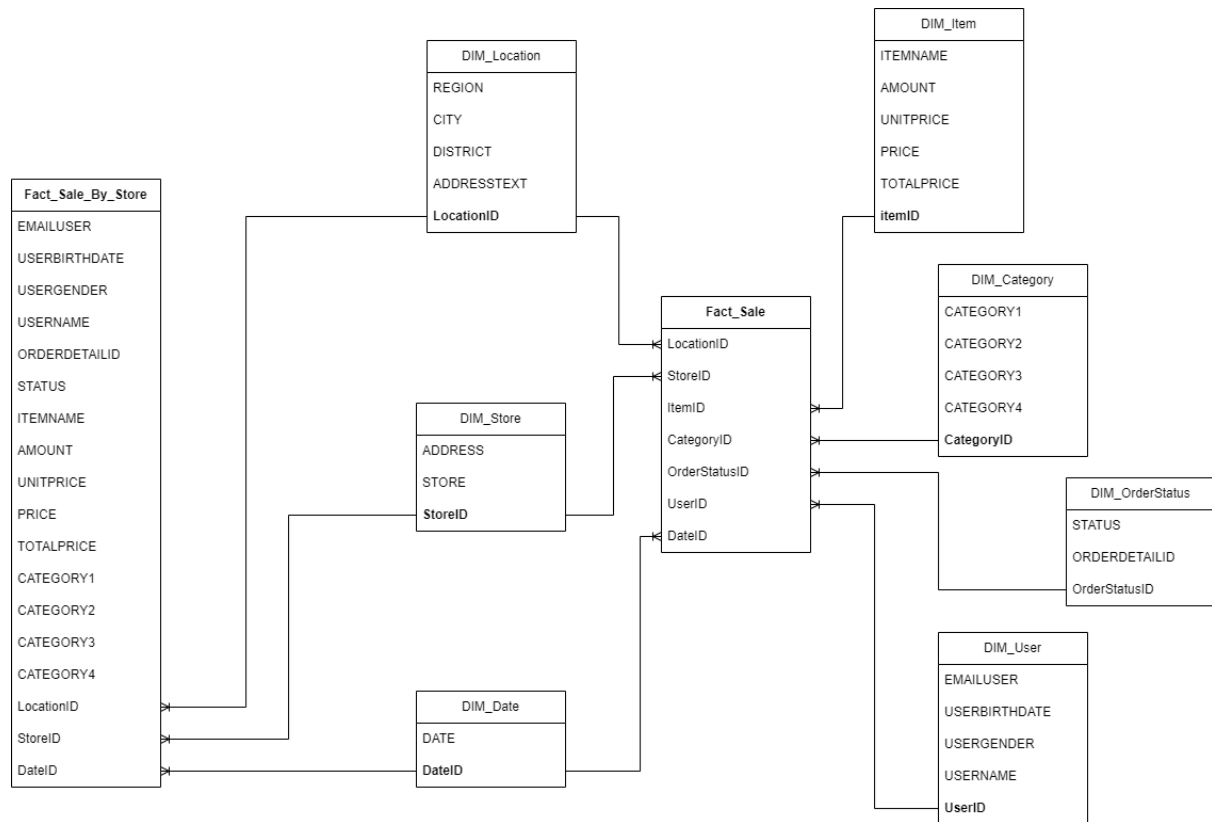


Figure 2-1 Conceptual modeling diagram

## 2.2 Logical modeling

### 2.2.1 Description of dimension table attributes

**DIM\_ITEM table:**

ID	Field	Description	Type
1	ITEMNAME	Item's name	varchar
2	AMOUNT	Amount of item	int
3	UNITPRICE	Price of item	int
4	TOTALPRICE	Total price of item	int
5	ITEMID	Primary key	int

**DIM ORDERSTATUS table:**

ID	Field	Description	Type
1	ORDERSTATUSID	Primary key	int
2	STATUS	Status of order	int
3	ORDERDETAILID	Id of order	int

**DIM CATEGORY table:**

ID	Field	Description	Type
1	CATEGORYID	Primary key	int
2	CATEGORY1	Category of item	varchar
3	CATEGORY2	Category of item	varchar
4	CATEGORY3	Category of item	varchar
5	CATEGORY4	Category of item	varchar

**DIM USER table:**

ID	Field	Description	Type
1	USERID	Primary key	int
2	EMAILUSER	Email of user	varchar
3	USERBIRTHDATE	User's birthday	date
4	USERGENDER	user's gender	varchar
	USERNAME	User's name	varchar

**DIM DATE table:**

ID	Field	Description	Type
1	DATEID	Primary key	int
2	DATE	Date of order	date

**DIM\_LOCATION table:**

ID	Field	Description	Type
1	LOCATIONID	Primary key	int
2	REGION	Region have store	varchar
3	CITY	City have store	varchar
4	DISTRICT	District of store	varchar
5	ADDRESSTEXT	Address text of store	varchar

**DIM STORE table:**

ID	Field	Description	Type
1	STOREID	Primary key	int
2	ADDRESS	Address of store	varchar
3	STORE	Store have item	varchar

**FACT\_SALE table:**

ID	Field	Description	Type
1	LOCATIONID	Primary key, Foreigner key	int
2	ITEMID	Primary key, Foreigner key	int
3	ORDERSTATUSID	Primary key, Foreigner key	int
4	CATEGORYID	Primary key, Foreigner key	int
5	USERID	Primary key, Foreigner key	int
6	DATEID	Primary key, Foreigner key	int
7	STOREID	Primary key, Foreigner key	int

**FACT\_SALE\_BY\_STORE table:**

ID	Field	Description	Type
1	LOCATIONID	Primary key, Foreigner key	int
2	STOREID	Primary key, Foreigner key	int
3	DATEID	Primary key, Foreigner key	int
4	ITEMNAME	Item's name	varchar
5	AMOUNT	Amount of item	int
6	UNITPRICE	Price of item	int
7	TOTALPRICE	Total price of item	int
8	PRICE	Price of item	int

**2.3 Query question**

Question 1: Total daily revenue of the store by status

Question 2: Top 5 Stores with the Highest Sales Volume and Revenue

Question 3: Total Number Of Category Sold

Question 4: Number of order by gender of the customer

Question 5: Top 10 Sales Days with the Highest Total Revenue



Question 6: Top 10 Cities with the Highest Number of Orders and Total Revenue

Question 7: Top 10 Days With The Most Sales By Store

Question 8: Top 5 Districts With The Highest Total Number Of Orderdetails

Question 9: Top 10 Address text Days With The Highest Selling Price Ever

Question 10: Number Of Genders Of Shoppers In City And Region

## Chapter 3: Data Warehouse Development

### 3.1 Physical modeling - SSMS

#### 3.1.1 Dimensions table

DIM\_ITEM table:


	Column Name	Data Type	Allow Nulls
	ITEMNAME	nvarchar(255)	<input checked="" type="checkbox"/>
	AMOUNT	bigint	<input checked="" type="checkbox"/>
	UNITPRICE	bigint	<input checked="" type="checkbox"/>
	PRICE	bigint	<input checked="" type="checkbox"/>
	TOTALPRICE	bigint	<input checked="" type="checkbox"/>
	ItemID	int	<input type="checkbox"/>

Figure 3-1 Item Dim

DIM\_ORDERSTATUS table:


	Column Name	Data Type	Allow Nulls
	STATUS	bigint	<input checked="" type="checkbox"/>
	ORDERDETAILID	bigint	<input checked="" type="checkbox"/>
	OrderStatusID	int	<input type="checkbox"/>

Figure 3-2 Orders Status Dim

DIM\_CATEGORY table:



	Column Name	Data Type	Allow Nulls
	CATEGORY1	nvarchar(255)	<input checked="" type="checkbox"/>
	CATEGORY2	nvarchar(255)	<input checked="" type="checkbox"/>
	CATEGORY3	nvarchar(255)	<input checked="" type="checkbox"/>
	CATEGORY4	nvarchar(255)	<input checked="" type="checkbox"/>
	CategoryID	int	<input type="checkbox"/>


Figure 3-3 Category Dim

DIM\_USER table:

	Column Name	Data Type	Allow Nulls
	EMAILUSER	nvarchar(255)	<input checked="" type="checkbox"/>
	USERBIRTHDATE	date	<input checked="" type="checkbox"/>
	USERGENDER	nvarchar(255)	<input checked="" type="checkbox"/>
	USERNAME	nvarchar(255)	<input checked="" type="checkbox"/>
	UserID	int	<input type="checkbox"/>


**Figure 3-4 User Dim**

DIM\_DATE table:

	Column Name	Data Type	Allow Nulls
	DATE	date	<input checked="" type="checkbox"/>
	DateID	int	<input type="checkbox"/>


**Figure 3-5 DateDim**

DIM\_LOCATION table:

	Column Name	Data Type	Allow Nulls
	REGION	nvarchar(255)	<input checked="" type="checkbox"/>
	CITY	nvarchar(255)	<input checked="" type="checkbox"/>
	DISTRICT	nvarchar(255)	<input checked="" type="checkbox"/>
	ADDRESSTEXT	nvarchar(255)	<input checked="" type="checkbox"/>
	LocationID	int	<input type="checkbox"/>

**Figure 3-6 Location Dim**

DIM\_STORE table:

	Column Name	Data Type	Allow Nulls
	ADRESS	nvarchar(255)	<input checked="" type="checkbox"/>
	STORE	nvarchar(255)	<input checked="" type="checkbox"/>
	StoreID	int	<input type="checkbox"/>

**Figure 3-7 Store Dim**

### 3.1.2 Fact table

FACT\_SALE table:

	Column Name	Data Type	Allow Nulls
	LocationID	int	<input checked="" type="checkbox"/>
	DateID	int	<input checked="" type="checkbox"/>
	StoreID	int	<input checked="" type="checkbox"/>
	UserID	int	<input checked="" type="checkbox"/>
	CategoryID	int	<input checked="" type="checkbox"/>
	OrderStatusID	int	<input checked="" type="checkbox"/>
	ItemID	int	<input checked="" type="checkbox"/>

**Figure 3-8 Sale Fact**

FACT\_SALE\_BY\_STORE table:

	Column Name	Data Type	Allow Nulls
►	EMAILUSER	nvarchar(255)	<input checked="" type="checkbox"/>
	USERBIRTHDATE	date	<input checked="" type="checkbox"/>
	USERGENDER	nvarchar(255)	<input checked="" type="checkbox"/>
	USERNAME	nvarchar(255)	<input checked="" type="checkbox"/>
	ORDERDETAILID	bigint	<input checked="" type="checkbox"/>
	STATUS	bigint	<input checked="" type="checkbox"/>
	ITEMNAME	nvarchar(255)	<input checked="" type="checkbox"/>
	AMOUNT	bigint	<input checked="" type="checkbox"/>
	UNITPRICE	bigint	<input checked="" type="checkbox"/>
	PRICE	bigint	<input checked="" type="checkbox"/>
	TOTALPRICE	bigint	<input checked="" type="checkbox"/>
	CATEGORY1	nvarchar(255)	<input checked="" type="checkbox"/>
	CATEGORY2	nvarchar(255)	<input checked="" type="checkbox"/>
	CATEGORY3	nvarchar(255)	<input checked="" type="checkbox"/>
	CATEGORY4	nvarchar(255)	<input checked="" type="checkbox"/>
	LocationID	int	<input checked="" type="checkbox"/>
	DateID	int	<input checked="" type="checkbox"/>
	StoreID	int	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

**Figure 3-9 Sale By Store Fact**

## 3.2 Star diagram - SSMS

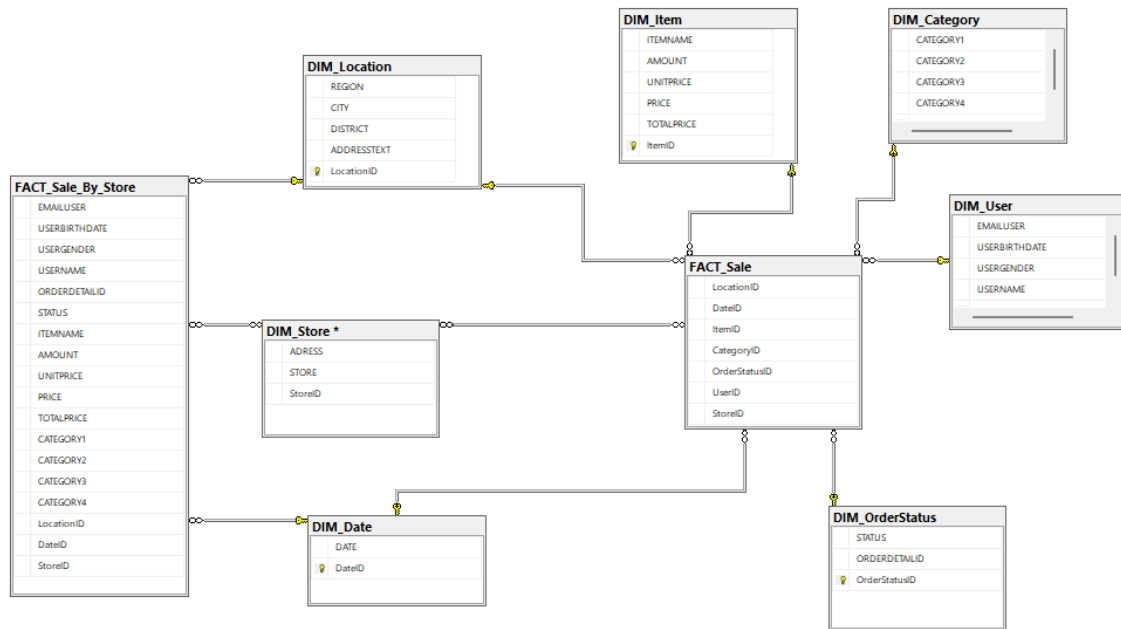


Figure 3-10 Star diagram

## Chapter 4: ETL Process

### 4.1 Conceptual ETL design

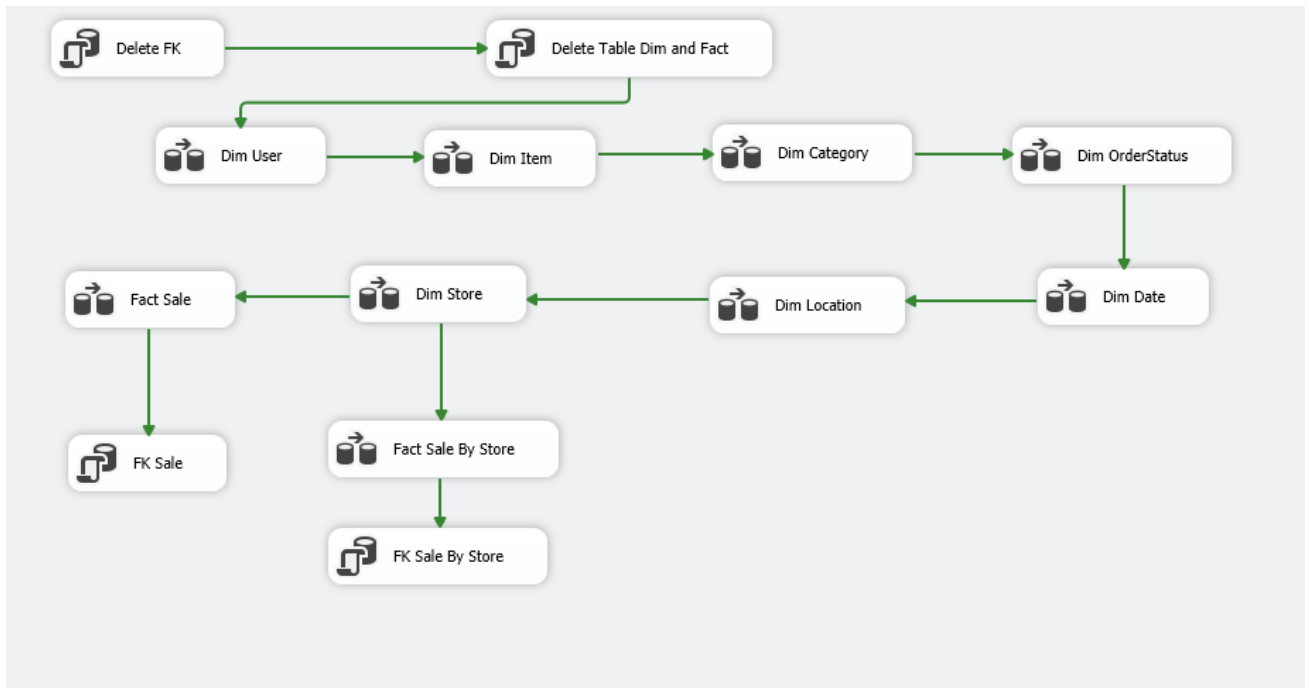


Figure 4-1 Conceptual ETL design

### 4.2 ETL development by using SSIS

#### 4.2.1 Dim User

Data flow:

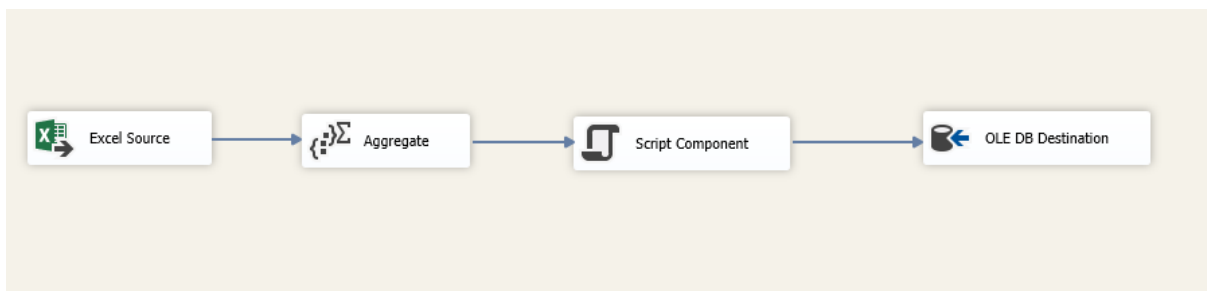


Figure 4-2 User Dim Data Flow

Results after performing the ETL process:

	EMAILUSER	USERBIRTHDATE	USERGENDER	USERNAME	UserID
1	aya_ayordu@fakeyahoo.com	1996-09-23	FeMale	Ayaz AYÖRDÜ	1
2	sen_omur@fakegmail.com	1987-04-13	FeMale	Şenol Dursun ÖMÜR	2
3	der_namli@fakeoutlook.com	1999-08-21	Male	Derin NAMLI	3
4	met_topalci@fakeoutlook.com	1971-07-25	FeMale	Mete TOPALCI	4
5	seb_orhan@fakeoutlook.com	1967-01-06	Male	Sebahat Nimet ORHAN	5
6	don_turunc@fakelive.com	1972-07-08	Male	Döndü TURUNÇ	6
7	naz_urasli@fakehotmail.com	1957-12-30	Male	Nazlı URASLI	7
8	cey_oztunc@fakeyahoo.com	1991-09-07	Male	Ceylin Asmin ÖZTÜNC	8
9	sal_variyenli@fakeyahoo.com	1958-02-06	FeMale	Salim VARİYENLİ	9
10	mes_turgal@fakegmail.com	1950-01-11	FeMale	Mesut Melih TURGAL	10
11	nih_cepni@fakelive.com	1960-08-29	Male	Nihal CEPNİ	11
12	sen_bayri@fakeoutlook.com	1959-03-29	Male	Sena BAYRI	12

✓ Query executed successfully. | VUONG

Figure 4-3 User Dim result

#### 4.2.2 Dim Item

Data flow:

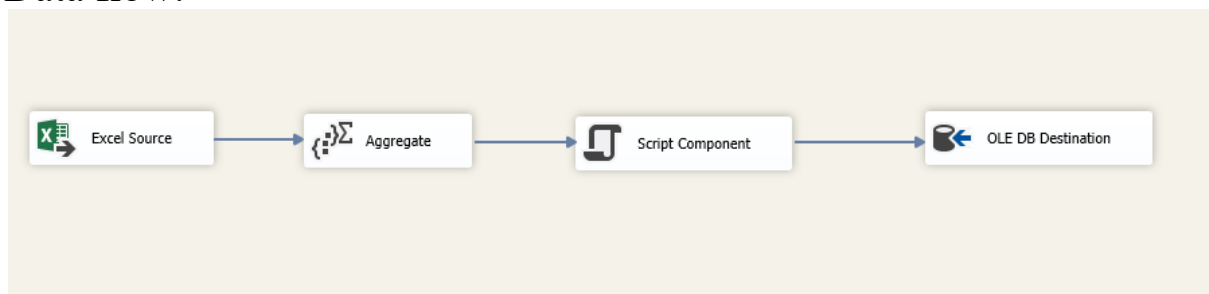


Figure 4-4 Item Dim Data Flow

Results after performing the ETL process:

	ITEMNAME	AMOUNT	UNITPRICE	PRICE	TOTALPRICE	ItemID
1	GEZER TERLIK PATİK ERKEK GT5YPM.08489.01	20	450	397	1521	1
2	TEKINAY KONSANTRE 2 LT PORTAKAL *9*	10	108	73	269	2
3	ALGIDA 750 ML KEYIF KAKAO-VANILYA	17	180	168	720	3
4	UZUM BEYAZ	44	378	364	1819	4
5	TORKU KEK 55 GR FAV.MUZ SOS. *144*	7	12	7	24	5
6	ETİ BOLLOS CESNİLİ 55 GR *12*	30	24	23	78	6
7	ALGIDA MARAS SADE CEVİZ 500 ML *6*	34	574	413	2245	7
8	KENTON PUD.MUZLU 100 GR *24*	24	55	49	247	8
9	FATİH OYUN HAMURU KÜÇÜK 4RENK	2	29	31	62	9
10	ICIM M.SUYU 1 LT KAYISI *12*	19	40	38	176	10
11	FAIRY PLAT.PLUS BUL.MAK.KAPSUL 8 LI*6*	46	684	577	2170	11
12	VILEDA PASPAS SAPI KIRMIZI *10*	40	931	763	4364	12

✓ Query executed successfully. | VUONGBA14

Figure 4-5 Item Dim result

### 4.2.3 Dim Category

Data flow:

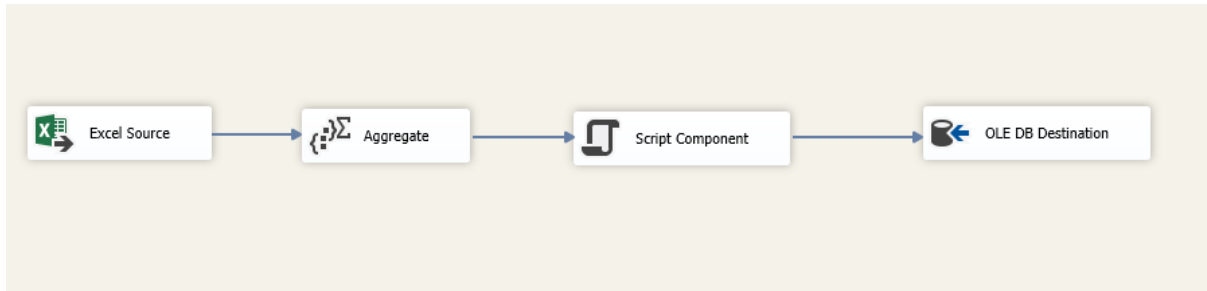


Figure 4-6 Category Dim Data Flow

Results after performing the ETL process:

	CATEGORY1	CATEGORY2	CATEGORY3	CATEGORY4	CategoryID
1	SEKERLEME	CIKOLATA-GOFRET	GOFRET	SUTLU	1
2	EV	MUTFAK GERECLERI	MUTFAK ESYA-GERECLERI	DIGER SERVIS GERECLERI	2
3	EV	TEKSTIL-GIYIM-AKSESUAR	CORAPLAR	ERKEK CORAP	3
4	EV	MUTFAK GERECLERI	MUTFAK ESYA-GERECLERI		4
5	KOZMETIK	AGIZ BAKIM URUNLERI	AGIZ SULARI	DIS VE AGIZ SULARI	5
6	TEMIZLIK	EV TEMIZLEYICILER	HASERE OLDURUCULER	SIVI SPREYLER	6
7	ET	ISLENMIS ET	SUCUK	HINDI SUCUK	7
8	GIDA	DONUK URUNLER	DONDURULMUS GIDA	BURGER	8
9	EV	MUTFAK GERECLERI	MUTFAK ESYA-GERECLERI	CAY KASIGI-KARISTIRICI	9
10	KAHVALTILIK	SUT-YOGURT-PEYNIR	PEYNIRLER	BEYAZ PEYNIRLER	10
11	GIDA	CORBA-BULYON	CORBALAR	HAZIR CORBA	11
12	DETERJAN	BULASIK YIKAMA	BULASIK MAKINASI URUNLERI	SIVI	12

✓ Query executed successfully. VUONGBA1403 (16.0)

Figure 4-7 Category Dim result

### 4.2.4 Dim OrderStatus

Data flow:

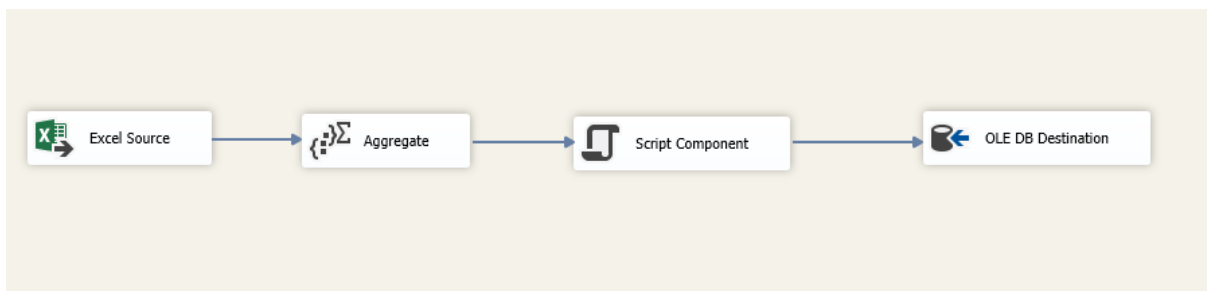


Figure 4-8 OrderStatus Dim Data Flow

Results after performing the ETL process:



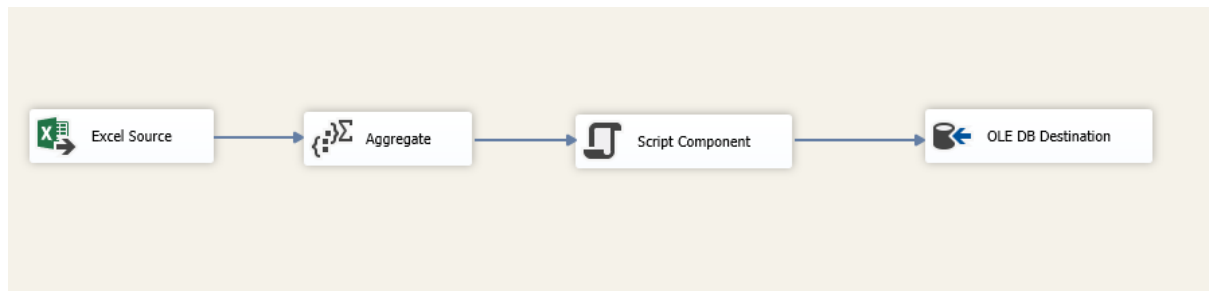
	ORDERDETAILID	STATUS	OrderStatusID
1	109377	1	1
2	23438	1	2
3	132815	1	3
4	46876	1	4
5	70314	1	5
6	93752	1	6
7	7813	1	7
8	117190	1	8
9	31251	1	9
10	140628	1	10
11	54689	1	11
12	78127	1	12

✓ Query executed successfully.

**Figure 4-9 OrderStatus Dim result**

#### 4.2.5 Dim Store

Data flow:



**Figure 4-10 Store Dim Data Flow**

Results after performing the ETL process:

	ADRESS	STORE	StoreID
1	ELBİSTAN	PIKNIK	1
2	PERŞEMBE	BINGO	2
3	KİLİS MERKEZ	DIDI	3
4	TÜRKELİ	ULKER	4
5	ERUH	PEPSI	5
6	ARNAVUTKÖY	KARO	6
7	KORKUTELİ	PATOS	7
8	ÖMRANİYE	KIRTASIYELER	8
9	ALIAĞA	TIMUR	9
10	TORBALI	CIPSO	10
11	FATİH	BEBELAC	11
12	ATAKUM	SUTAS	12

✓ Query executed successfully.

**Figure 4-11 Store Dim result**

## 4.2.6 Dim Location

Data flow:

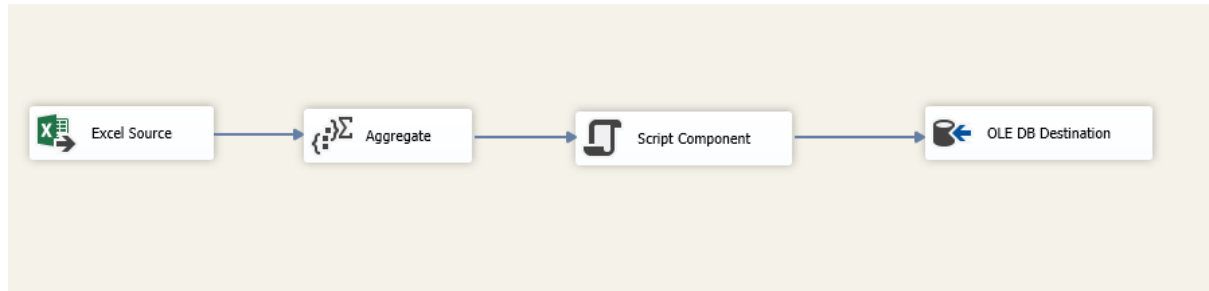


Figure 4-12 Location Dim Data Flow

Results after performing the ETL process:

	REGION	CITY	DISTRICT	ADDRESSTEXT	LocationID
1	Güneydoğu Anadolu	Şırnak	PINARBAŞI KÖYÜ	PINARBAŞI KÖYÜ MAH. KÖYÜN KENDİSİ 73302 İDİL/ŞIRNAK	1
2	Marmara	Kırklareli	ZAFER MAH.	ZAFER MAH. CENGİZ 1. SOKAK 39750 LÜLEBURGAZ/KIRK...	2
3	Akdeniz	Antalya	AHATLI MAH.	AHATLI MAH. 3171.. SOKAK 07090 KEPEZ/ANTALYA	3
4	Marmara	İstanbul	BAHÇELİEVLER MAH.	BAHÇELİEVLER MAH. İSİMSİZ_405 SOKAK 34530 BÜYÜKÇ...	4
5	Doğu Anadolu	Erzurum	AŞAĞI MAH.	AŞAĞI MAH. RÜZGARLI SOKAK 25360 ŞENKAYA/ERZURUM	5
6	Karadeniz	Amasya	DEVECİ KÖYÜ	DEVECİ KÖYÜ MAH. KÖYÜN KENDİSİ 05502 SULUOVA/AM...	6
7	İç Anadolu	Yozgat	ŞEYHOSMAN MAH.	ŞEYHOSMAN MAH. SANAYİ 2.CADDE KÜME EVLERİ YOZ...	7
8	Marmara	Kocaeli	ÇINARLI MAH.	ÇINARLI MAH. UFUKHAN SOKAK 41900 DERİNCE/KOCAELİ	8
9	Marmara	İstanbul	MESCİT MAH.	MESCİT MAH. İRFAN SOKAK 34956 TUZLA/İSTANBUL	9
10	Marmara	Sakarya	KURTKÖY FATİH MAH.	KURTKÖY FATİH MAH. YAVUZ SELİM CADDESİ 54600 SAP...	10
11	Ege	İzmir	YENİŞAKRAN-SAYFIYE MAH.	YENİŞAKRAN-SAYFIYE MAH. 385. SOKAK ALİAĞA/İZMİR	11
12	Ege	İzmir	TURAN MAH.	TURAN MAH. ŞEHİT İSA YÜKSEL CADDESİ 35900 TİRE/İZ...	12

Query executed successfully. | VUONGBA1403 (16.0 RTM) | sa (148) | W.

Figure 4-13 Location Dim result

## 4.2.7 Dim Date

Data flow:

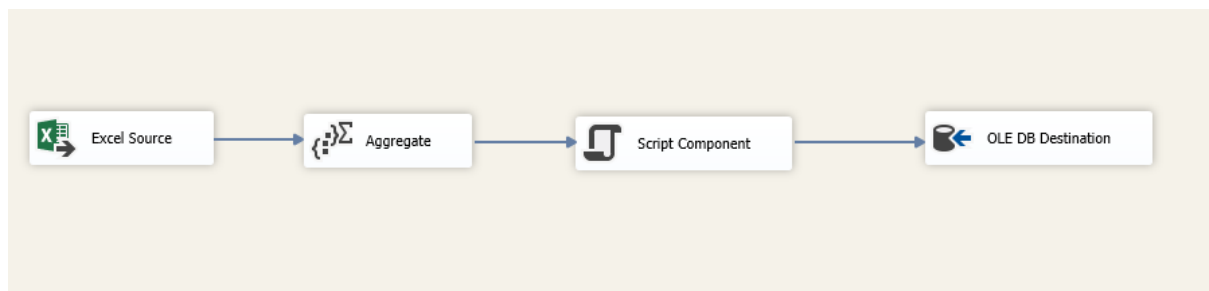


Figure 4-14 Date Dim Data Flow

Results after performing the ETL process:

	DATE	DateID
1	2021-02-01	1
2	2021-02-02	2
3	2021-02-03	3
4	2021-02-04	4
5	2021-02-05	5
6	2021-02-06	6
7	2021-02-07	7
8	2021-02-08	8
9	2021-02-09	9
10	2021-02-10	10
11	2021-02-11	11
12	2021-02-12	12

✓ Query executed successfully

Figure 4-15 Date Dim result

#### 4.2.8 Fact Sale

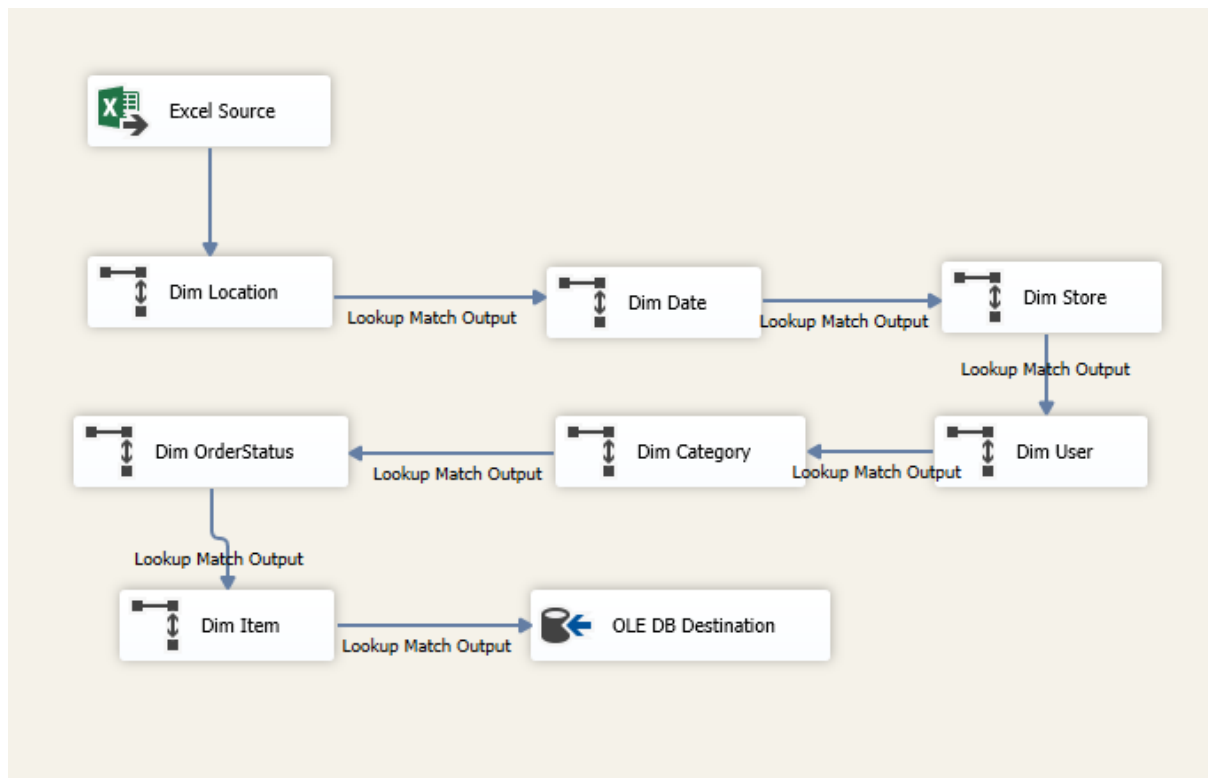


Figure 4-16 Sale Fact Data Flow

Results after performing the ETL process:

	LocationID	DateID	StoreID	UserID	CategoryID	OrderStatusID	ItemID
1	11181	401	3830	298	215	360	2562
2	13580	804	46204	10658	596	940	19183
3	14109	409	36458	2547	321	2800	22226
4	3782	133	1211	12327	763	14780	7556
5	14960	521	12779	11291	485	17180	12283
6	12034	22	21632	281	266	23600	941
7	593	380	19477	5356	671	26360	3077
8	8946	502	22497	3918	400	26800	14689
9	4018	892	25769	1623	794	45959	7127
10	6086	179	16727	10783	130	51222	14718
11	10270	215	58603	10049	509	57321	21447
12	40	167	43098	12802	453	61881	439

Query executed successfully.

Figure 4-17 Sale Fact result

#### 4.2.9 Fact Sale By Store

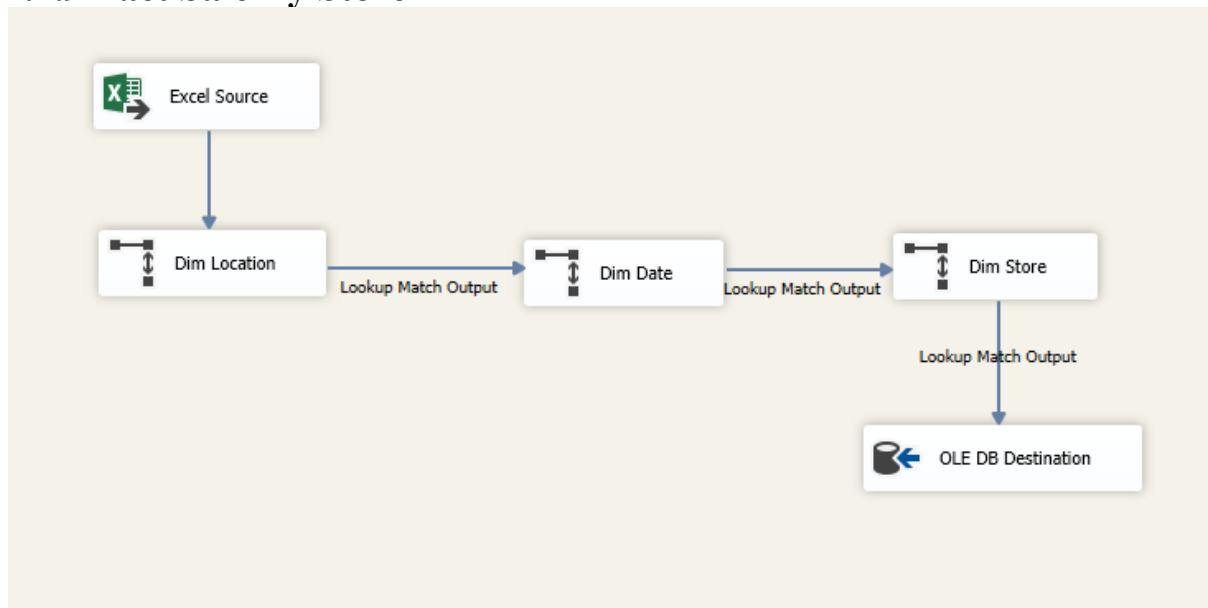


Figure 4-18 Sale By Store Fact Data Flow

Results after performing the ETL process:

	EMAILUSER	USERBIRTHDATE	USERGENDER	USERNAME	ORDERDETAILID	STATUS	ITEMNAME	AMOUNT	UNITPRICE	PRICE	TOTALPRICE	CATEGORY1
1	ale_dili@fakegmail.com	1995-11-12	Male	Aleya Asiye DILLI	1426	1	JOHNSON'S SAMP.750ML+200ML BEBE YAGI'S*	1	110	66	66	BEBEK
2	kad_atik@fakeyahoo.com	1981-12-11	Male	Kadiye ATIK	1432	1	GEZER PATIK KIZ KIZ KAYROKA GT1YPM.06691.00	8	102	114	908	EV
3	kad_atik@fakeyahoo.com	1981-12-11	Male	Kadiye ATIK	1430	1	PRF.ADIDAS BAY 100 ML INTENSE TOUCH	3	130	144	432	KOZMETIK
4	kad_atik@fakeyahoo.com	1981-12-11	Male	Kadiye ATIK	1429	1	CESARET VEREN BASARI OYKULERI	8	25	26	208	EV
5	kad_atik@fakeyahoo.com	1981-12-11	Male	Kadiye ATIK	1431	1	KIRTA.NURGE ABAKUS AD.	6	18	18	111	EV
6	pol_meler@fakelive.com	1962-08-14	FeMale	Polat Egemen MELER	1435	1	ABC KONS.YUM BOTANICS EYLUL.GUN.1440 ML "3"	5	75	86	430	DETERJAN
7	pol_meler@fakelive.com	1962-08-14	FeMale	Polat Egemen MELER	1434	1	PASTEL OJE 102	4	34	39	155	KOZMETIK
8	pol_meler@fakelive.com	1962-08-14	FeMale	Polat Egemen MELER	1433	1	FRITOLOY ROCCO REINGARENK DRJ.SEK."14"	2	10	11	21	GIDA
9	pol_meler@fakelive.com	1962-08-14	FeMale	Polat Egemen MELER	1437	1	OKUL ÇANTASI MY SCENE 09409 HAKAN	1	194	224	224	EV
10	pol_meler@fakelive.com	1962-08-14	FeMale	Polat Egemen MELER	1436	1	PINAR SUCUK AZ BAHARATLI 225 GR"10"	2	74	79	159	ET
11	cag_akgullu@fakelive.com	1969-04-11	Male	Çağla Dilek AKGÜLLÜ	1438	1	PIL KODAK XTRA HEAVY KALEM 2LI	8	24	26	207	EV

Figure 4-19 Sale By Store Fact result

## 4.3 SQL Task

### 4.3.1 Create SQL task

Delete Foreign Key :

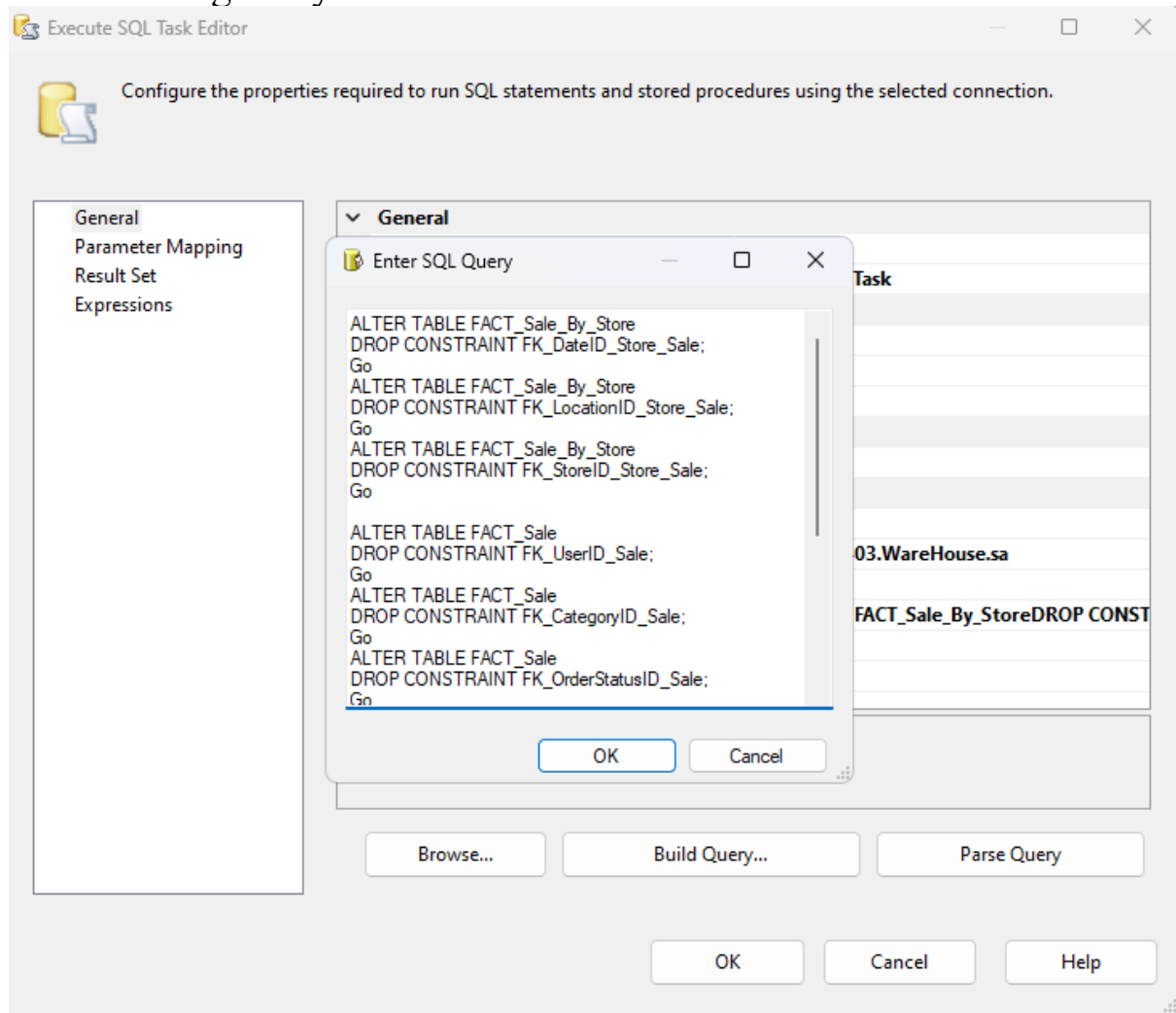


Figure 4-20 Delete Foreign Key

## Delete Dimension tables and Fact table :

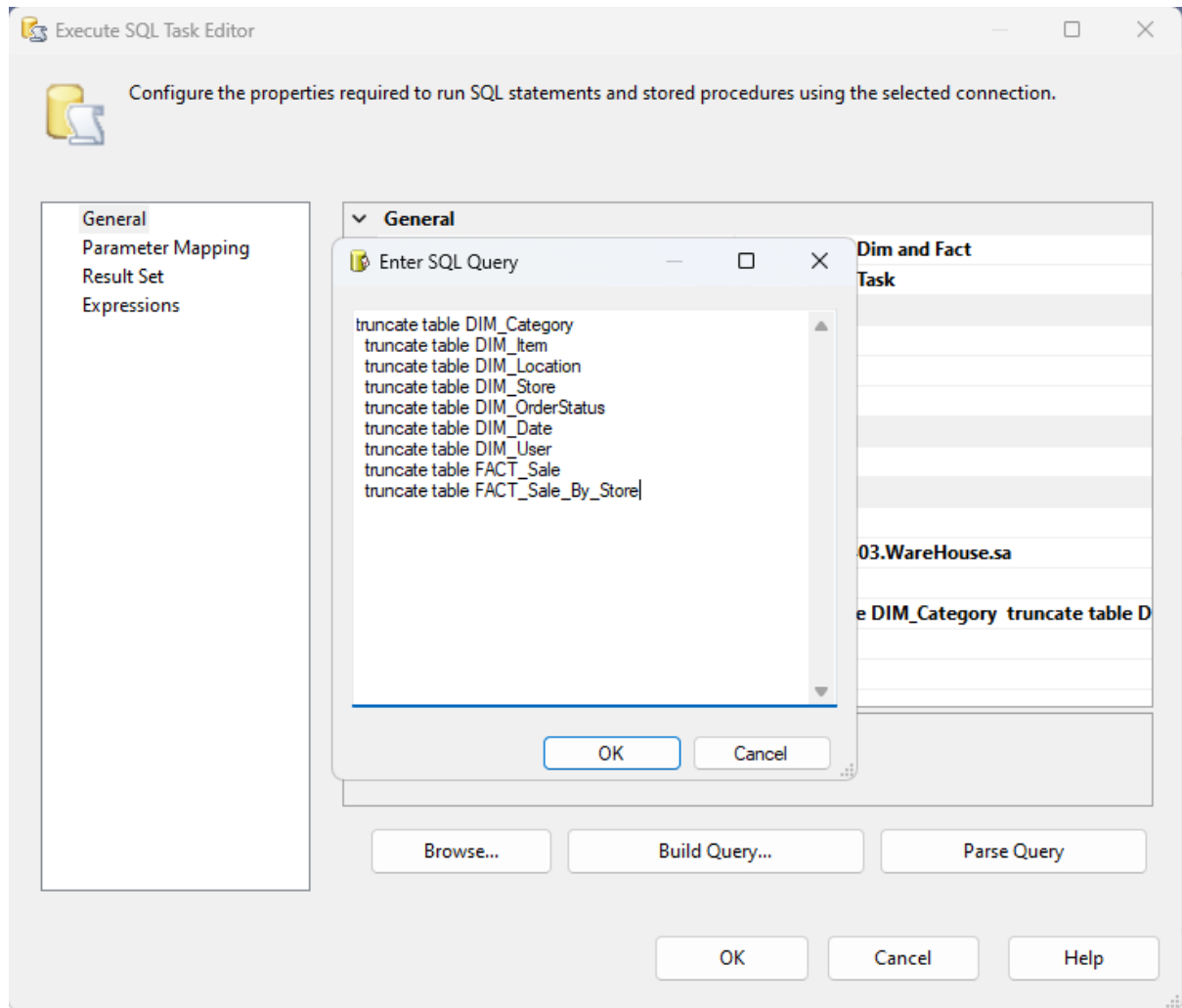
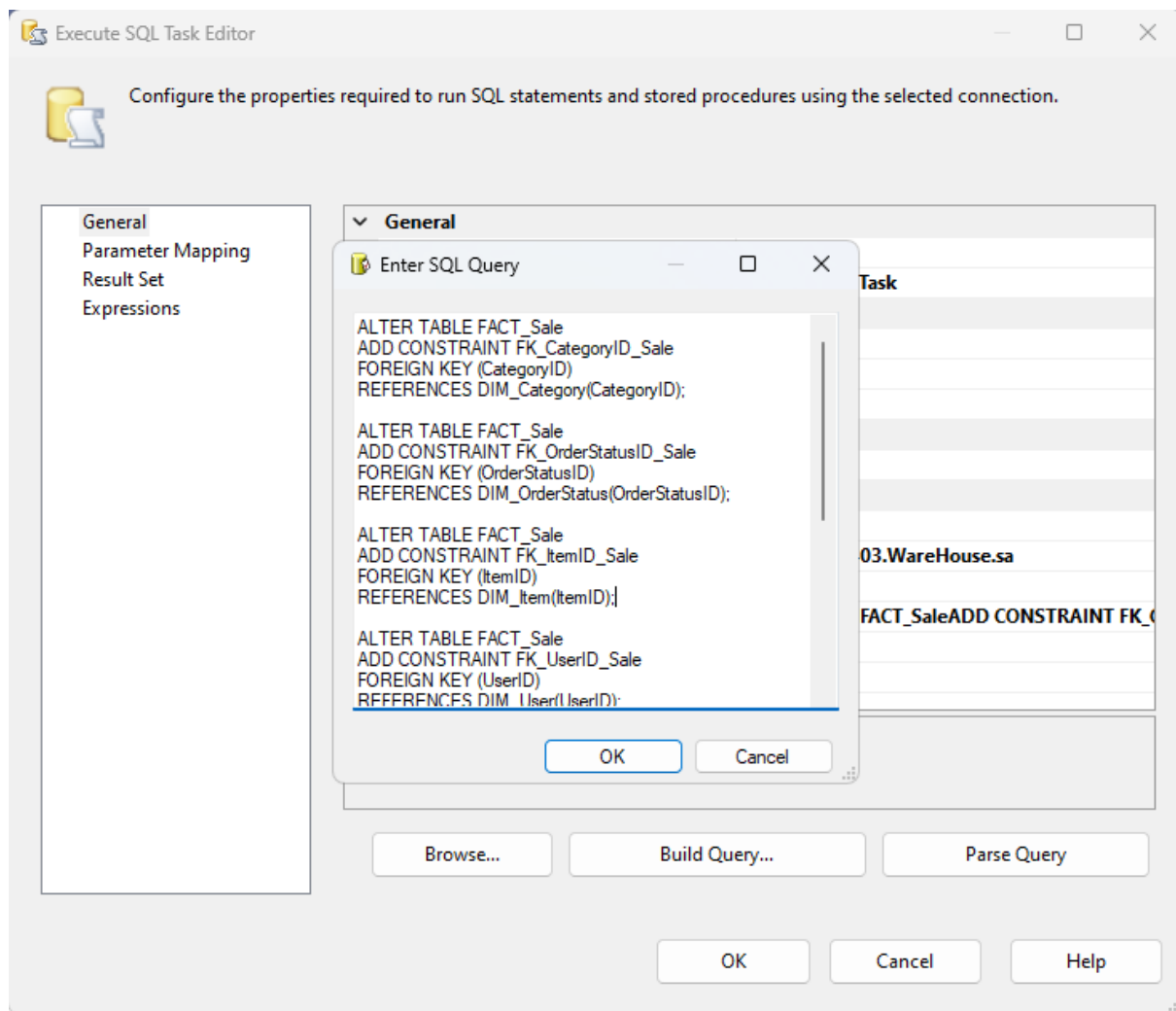


Figure 4-21 Delete Dimension and Fact table

## Create Foreign Key Sale :



**Figure 4-22 Create Foreign Key Sale**

Create Foreign Key Sale By Store :

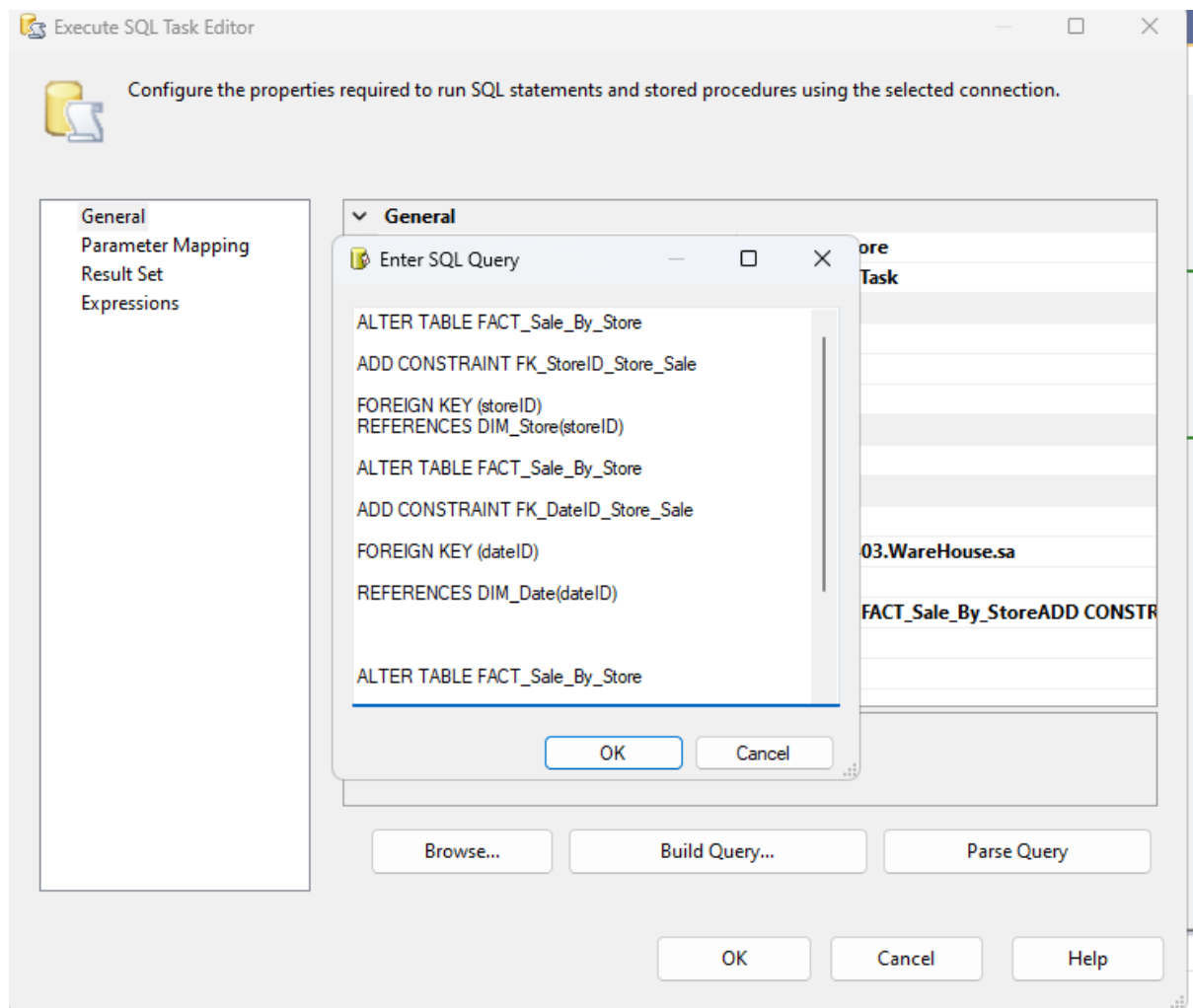


Figure 4-23 Create Foreign Key Sale by Store

### 4.3.2 Execution SQL task

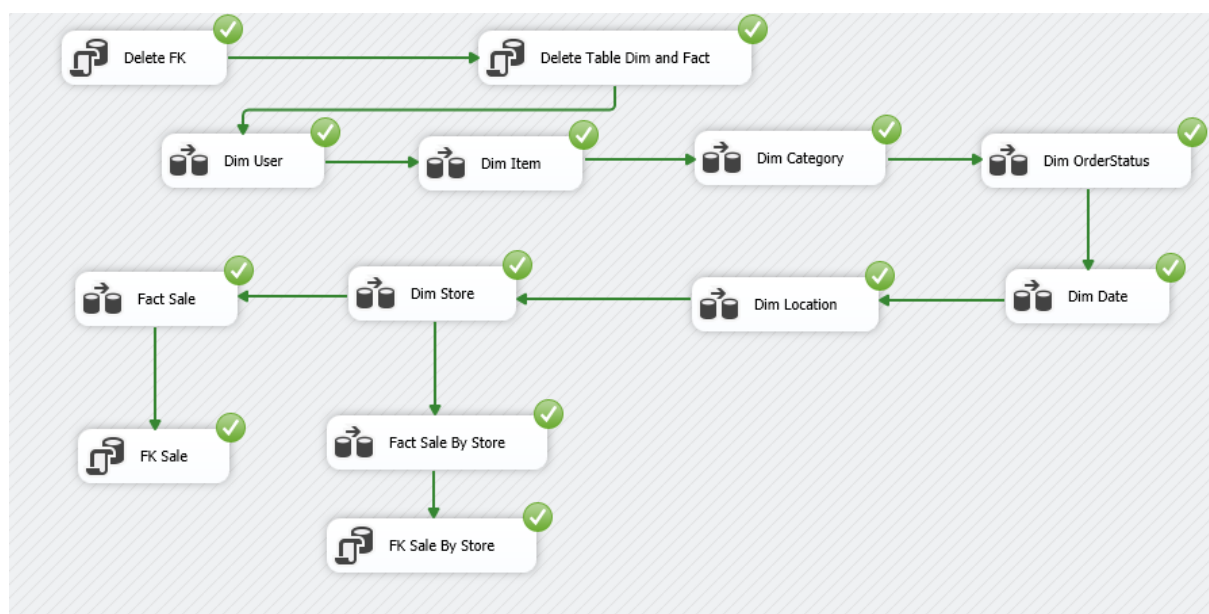


Figure 4-24 Execution SQL task



## Chapter 5: SSAS Process

### 5.1 Prepare tools

#### Create new SSAS project

Configure your new project

Analysis Services Multidimensional Project

Project name  
SSASDTWH

Location  
D:\Documents\Year 3, semester 1\Data warehouse\SSRS

Solution  
Create new solution

Solution name ⓘ  
SSASDTWH

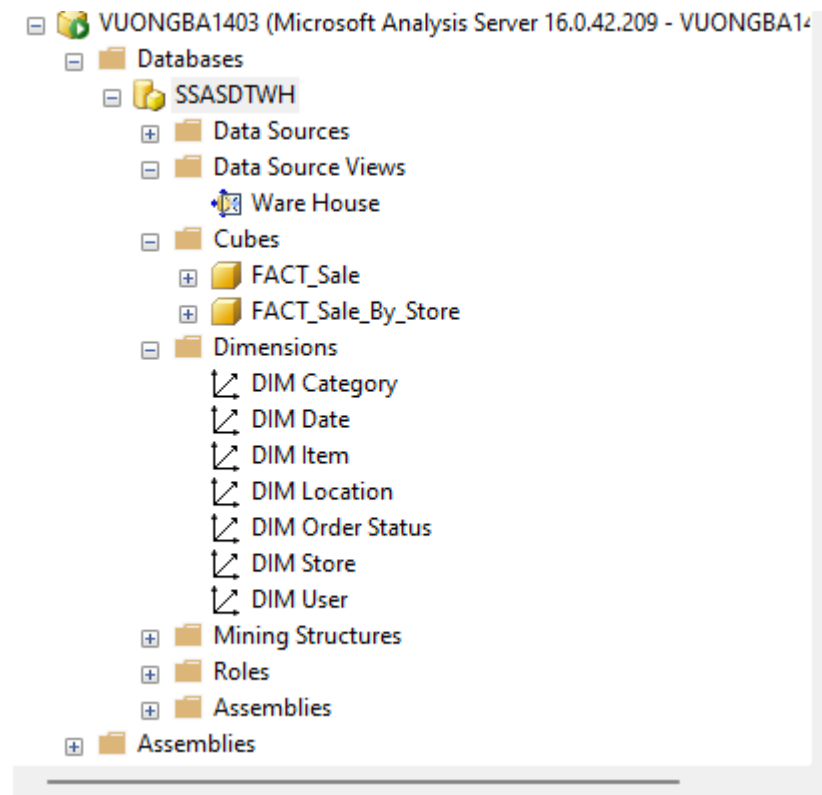
☐ Place solution and project in the same directory

Project will be created in "D:\Documents\Year 3, semester 1\Data warehouse\SSRS\SSASDTWH\SSASDTWH\."

Back Create

**Figure 5-1 Create new SSAS project**

The database is named “SSASDTWH” in SSMS version 19.2

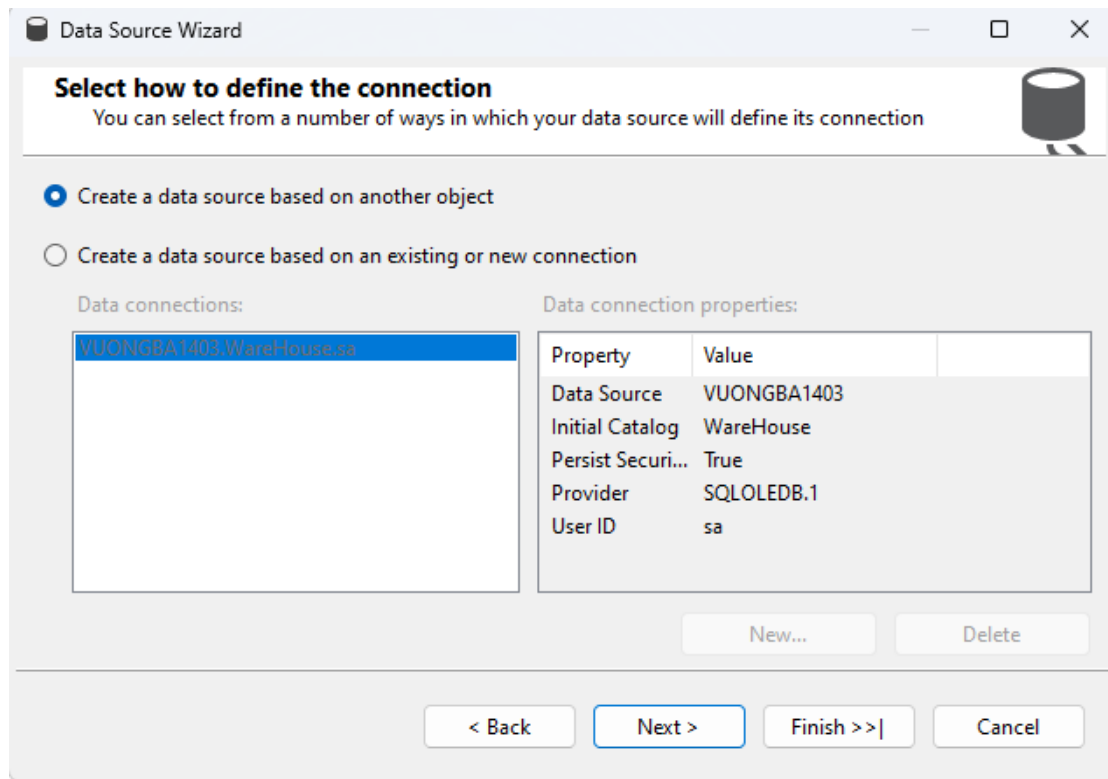


**Figure 5-2 Database structure of project**

## **5.2 Create Data Source View**

### **5.2.1 Implementation process**

Connect to Database :



**Figure 5-3 Connect project to database**

Import Data Source

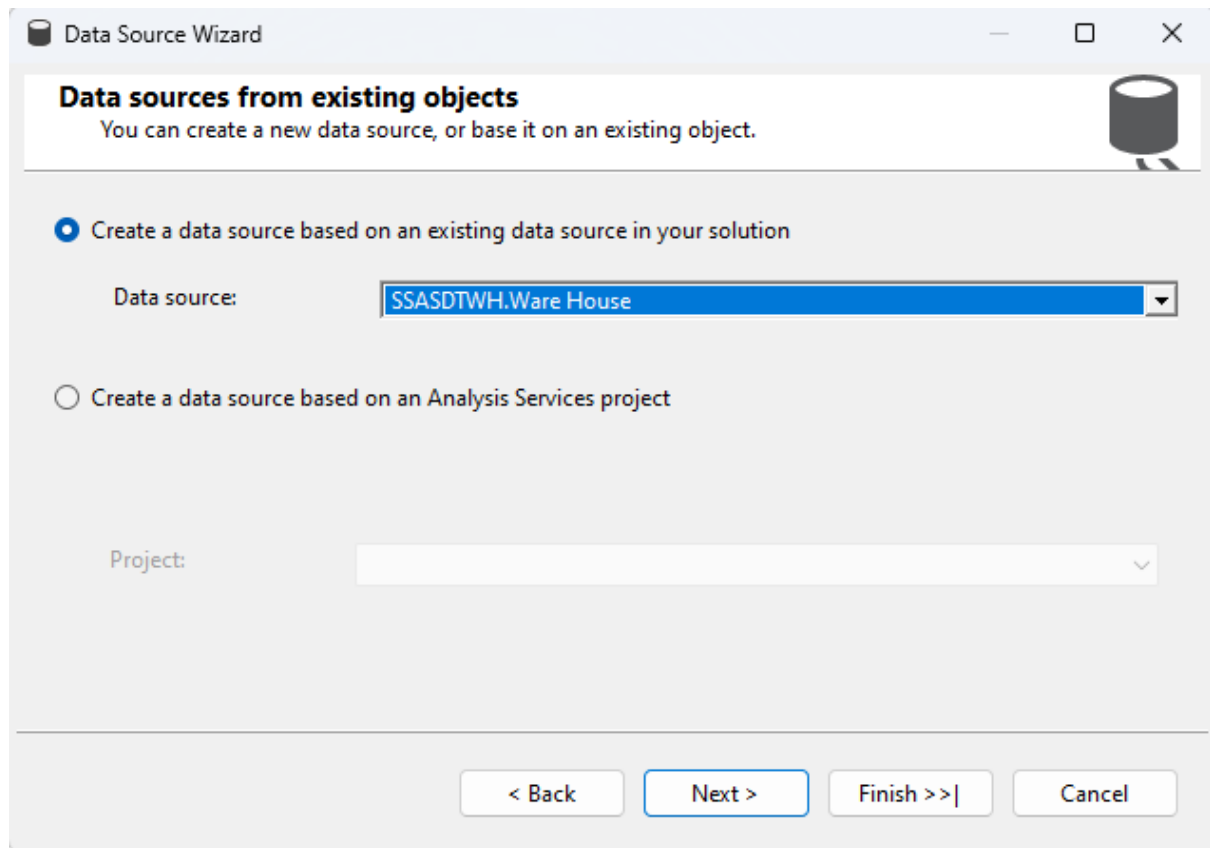
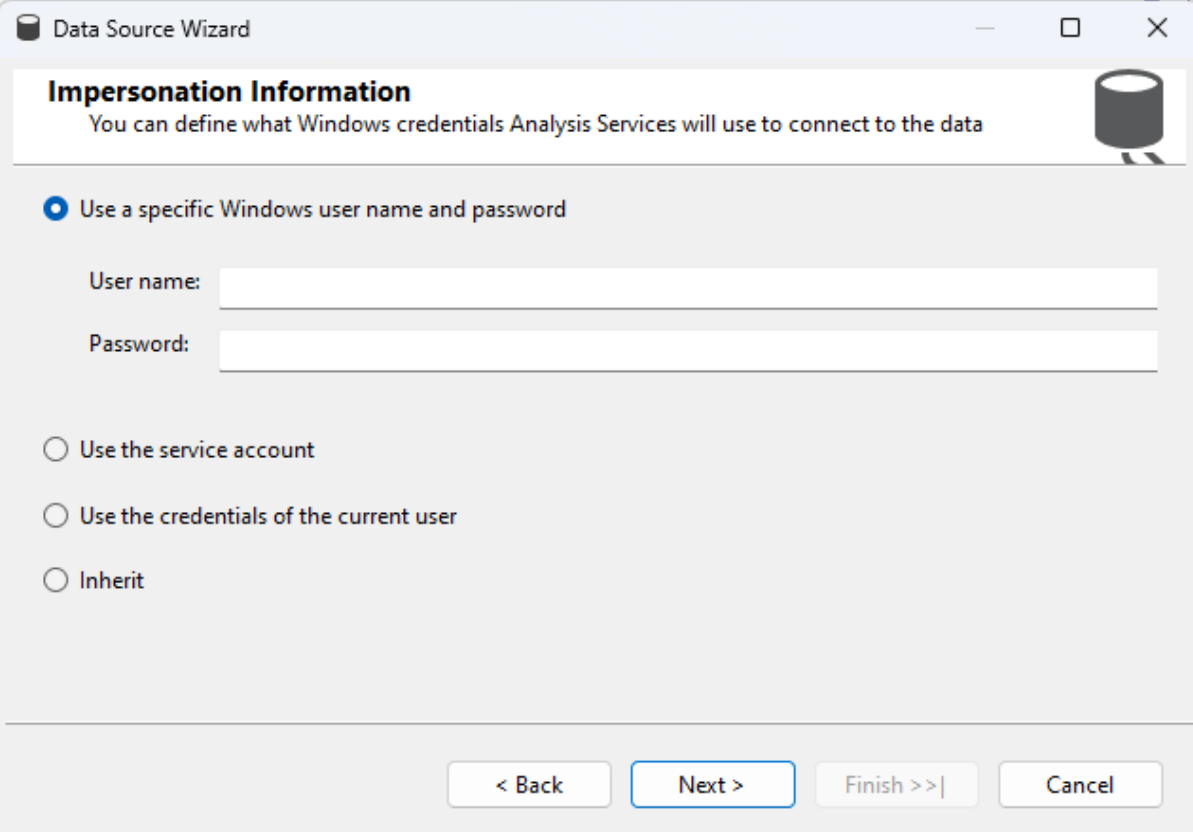


Figure 5-4 Import data soucre

Set up “Security Credentinal”



The image shows a Windows-style dialog box titled "Data Source Wizard". The main heading is "Impersonation Information" with a subtitle "You can define what Windows credentials Analysis Services will use to connect to the data". There is a database cylinder icon in the top right corner. The dialog contains three radio button options: "Use a specific Windows user name and password" (which is selected), "Use the service account", "Use the credentials of the current user", and "Inherit". The first option has two text input fields labeled "User name:" and "Password:". At the bottom, there are four buttons: "< Back", "Next >" (highlighted with a blue border), "Finish >>|", and "Cancel".

**Data Source Wizard**

**Impersonation Information**  
You can define what Windows credentials Analysis Services will use to connect to the data

☒ Use a specific Windows user name and password

User name:

Password:

☐ Use the service account

☐ Use the credentials of the current user

☐ Inherit

< Back   Next >   Finish >>|   Cancel

**Figure 5-5 Set up Security Credentials**

Create Data Source View :

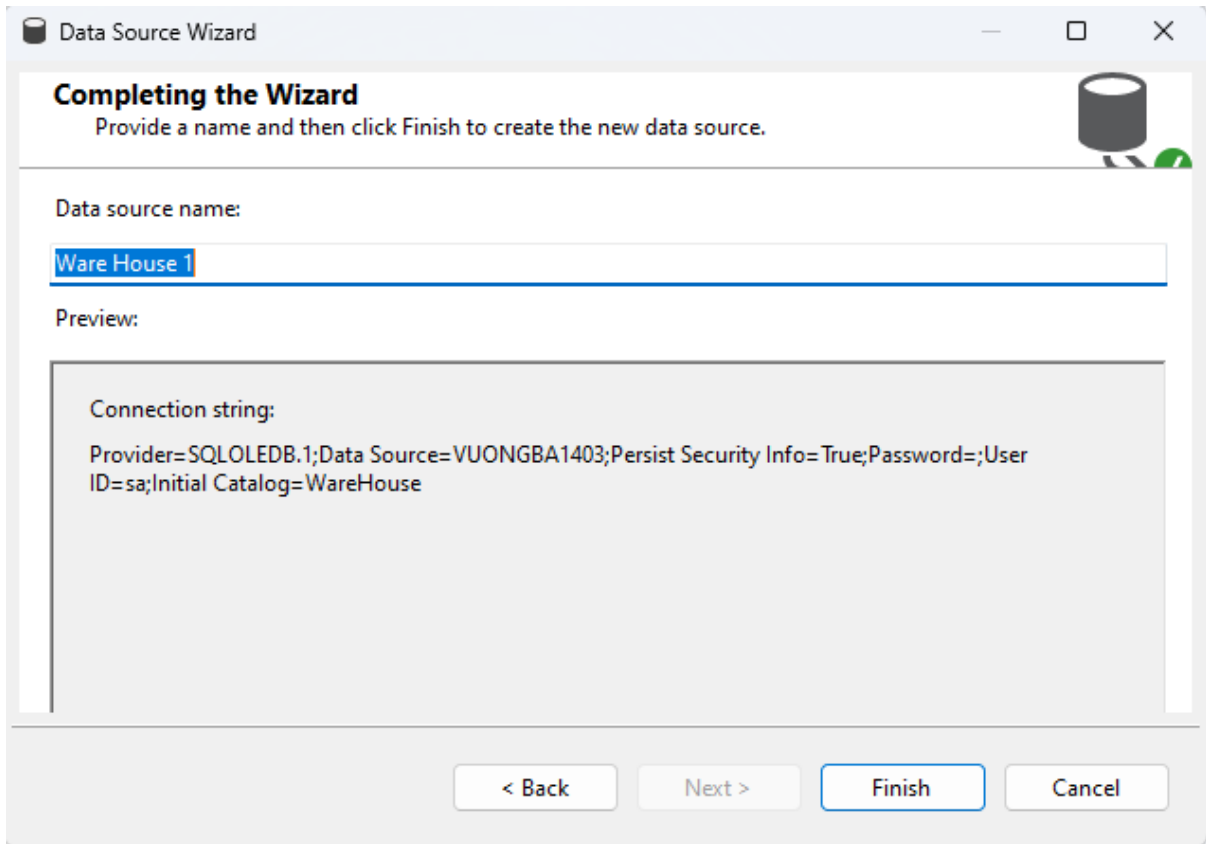


Figure 5-6 Create Data Source View

## 5.2.2 Data Source View in SSAS

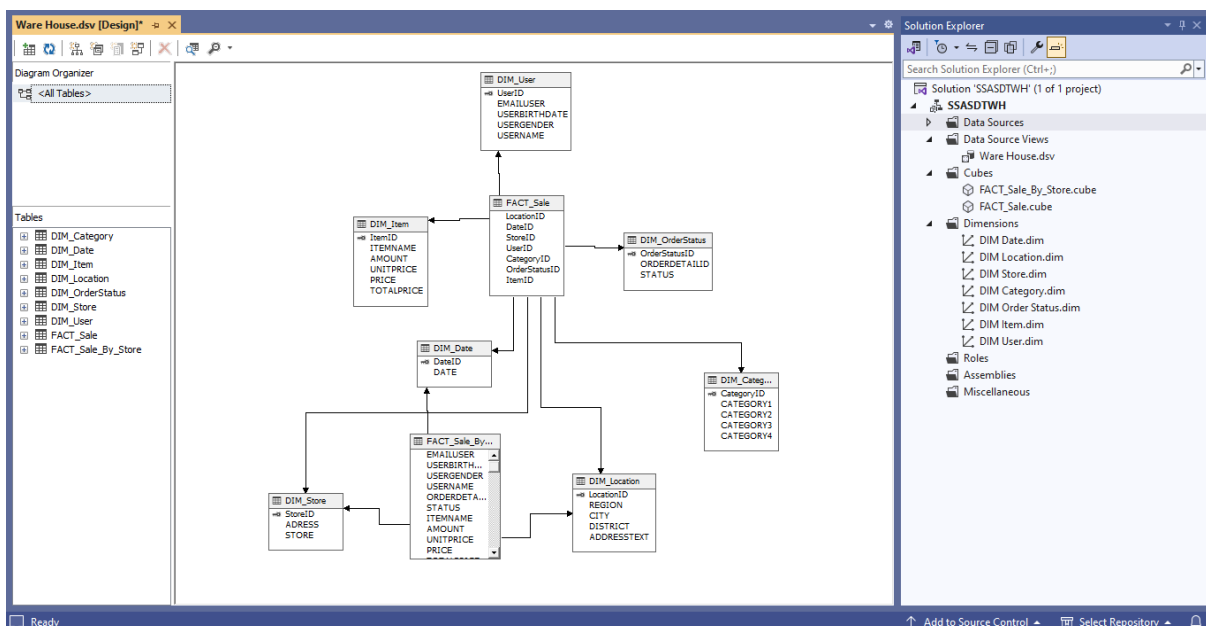


Figure 5-7 Data source view in SSAS

## 5.3 Create Cube

### 5.3.1 implementation process

Select measures :

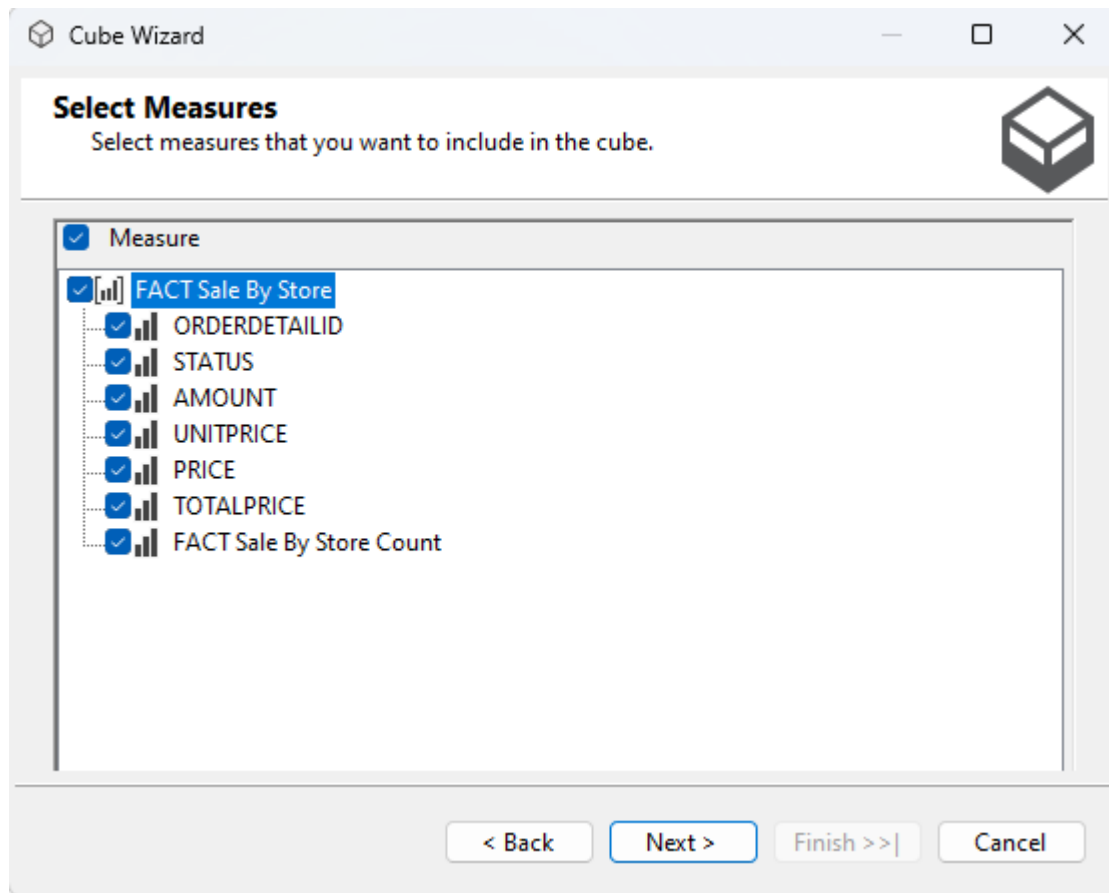
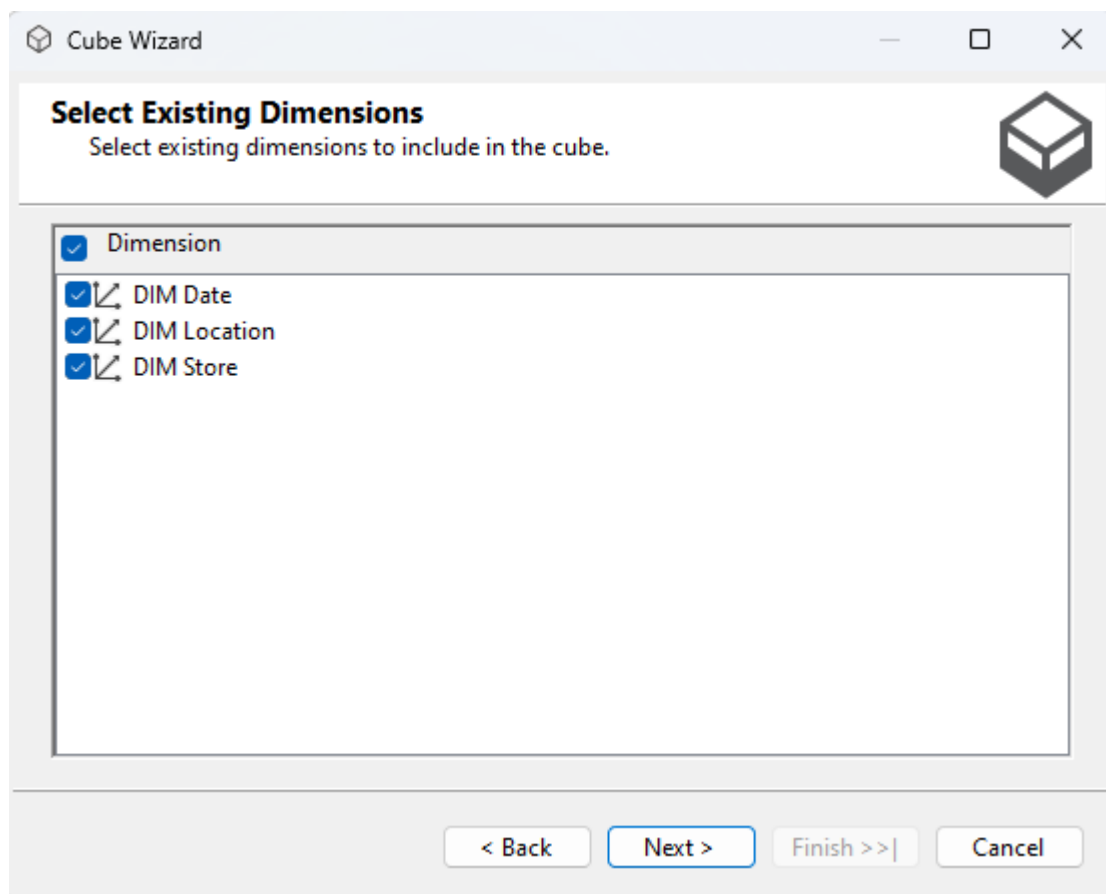


Figure 5-8 Select measures

Select dimensions :



**Figure 5-9 Select dimension**



Create Cube :

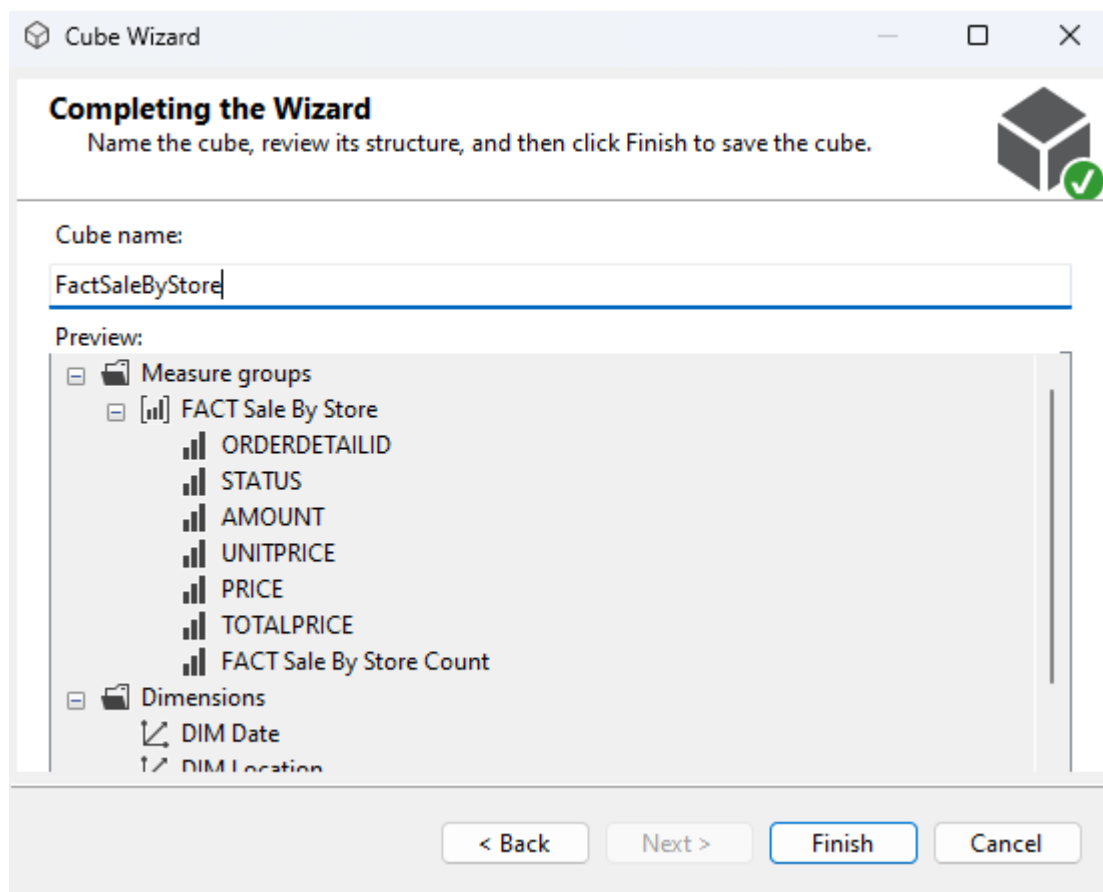
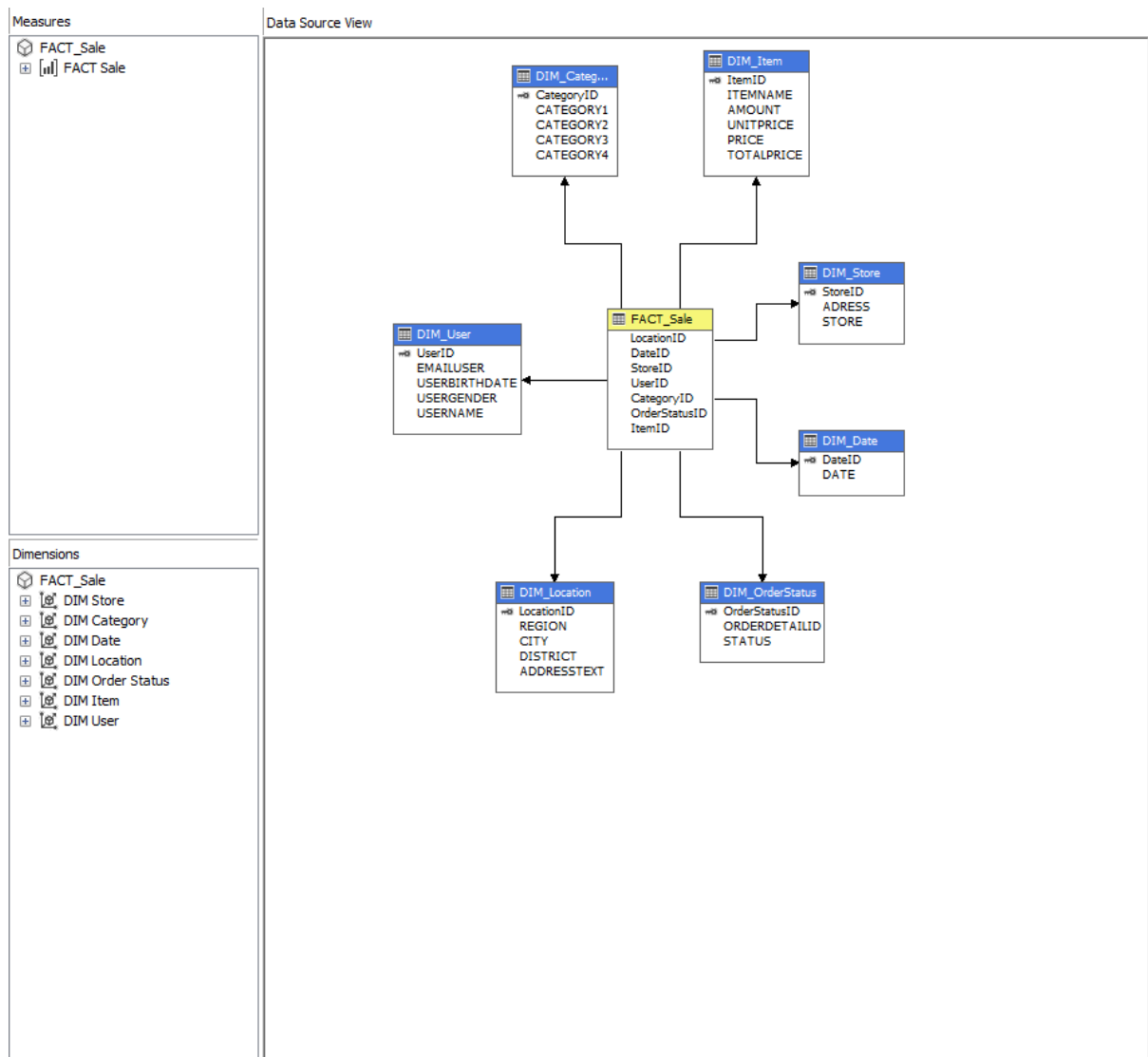


Figure 5-10 Create cube

### 5.3.2 Cube in SSAS

Cube in Fact Sale :



**Figure 5-11 Cube in Fact Sale**

Cube in Fact Sale By Store :

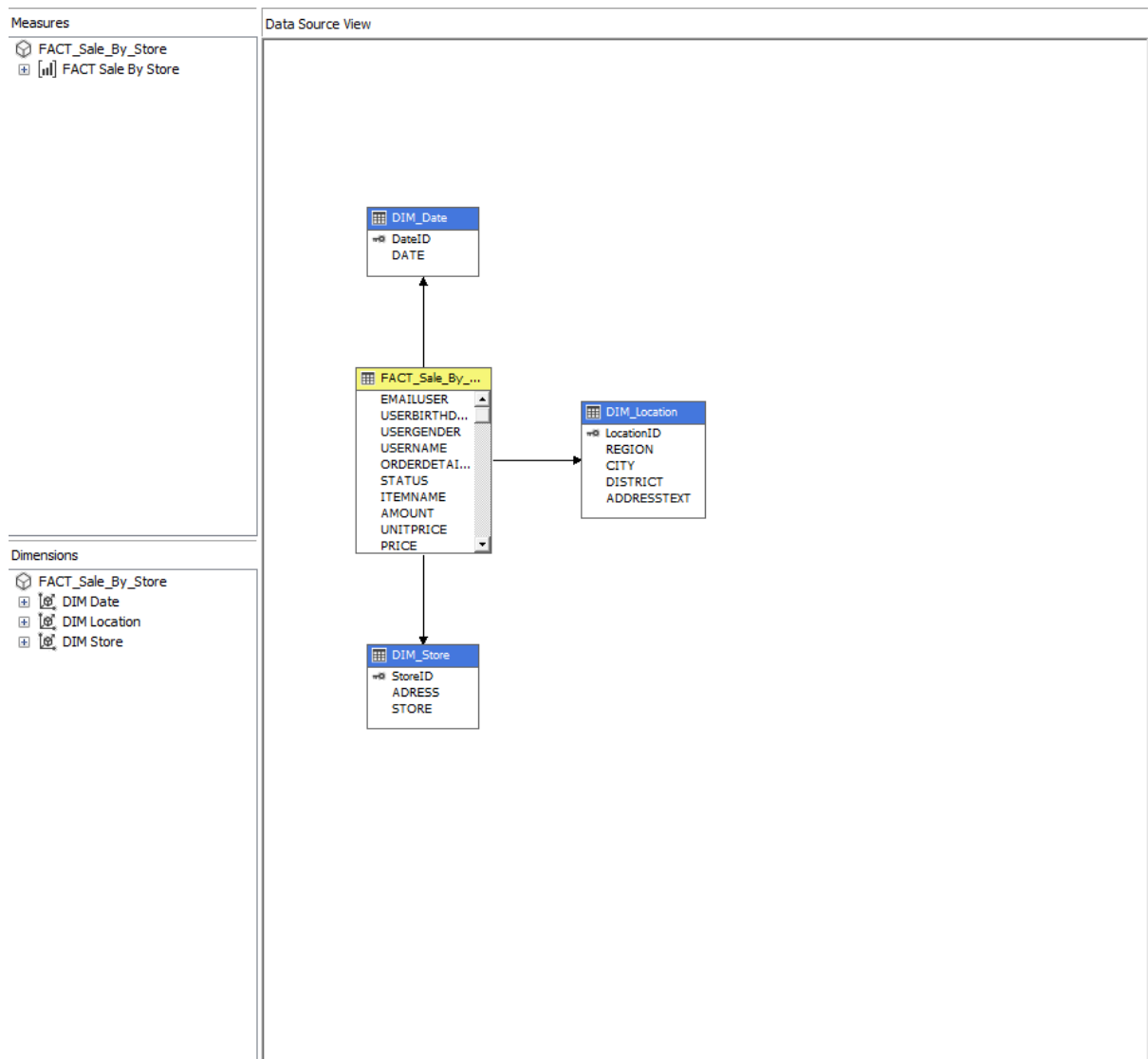


Figure 5-12 Cube in Face Sale by Store

## 5.4 Edit dimension tables

### 5.4.1 Add attributes

#### Edit DimDate

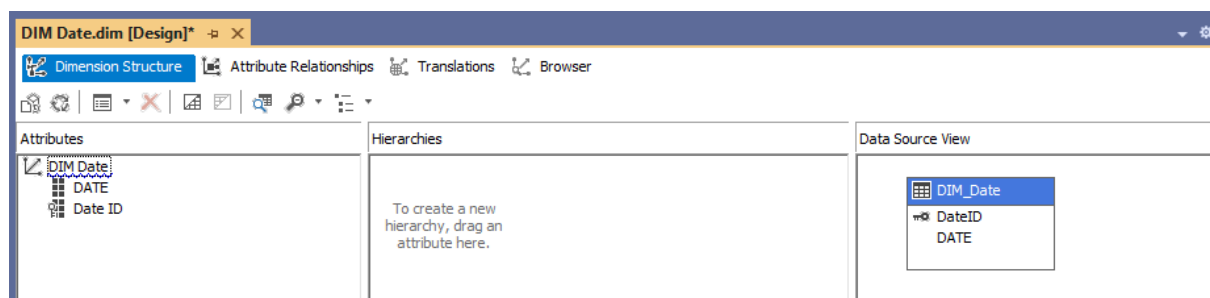


Figure 5-13 Edit DimDate

## Edit DimLocation



Figure 5-14 Edit DimLocation

## Edit DimStore

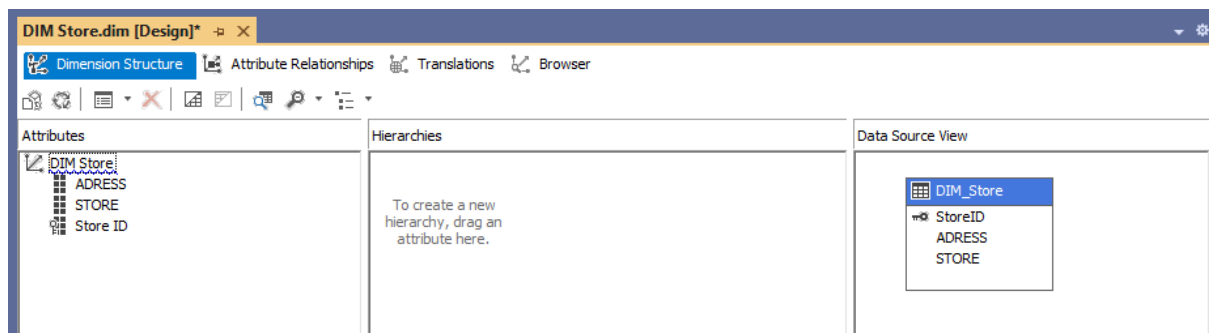


Figure 5-15 Edit DimStore

## Edit DimCategory

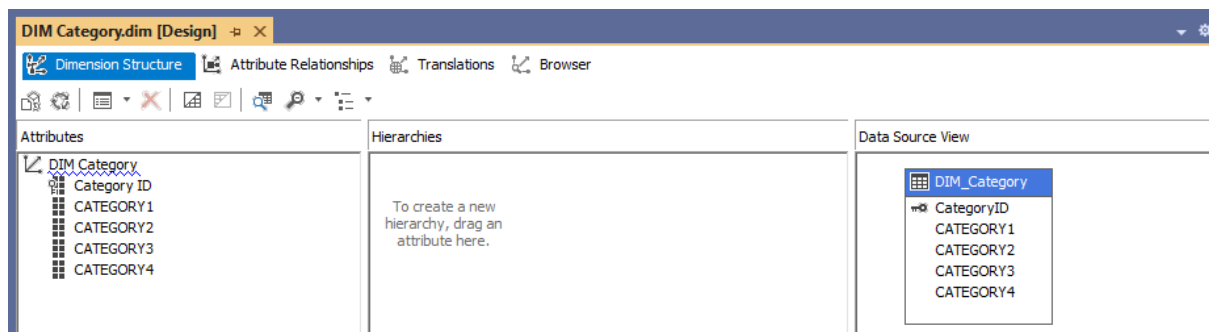
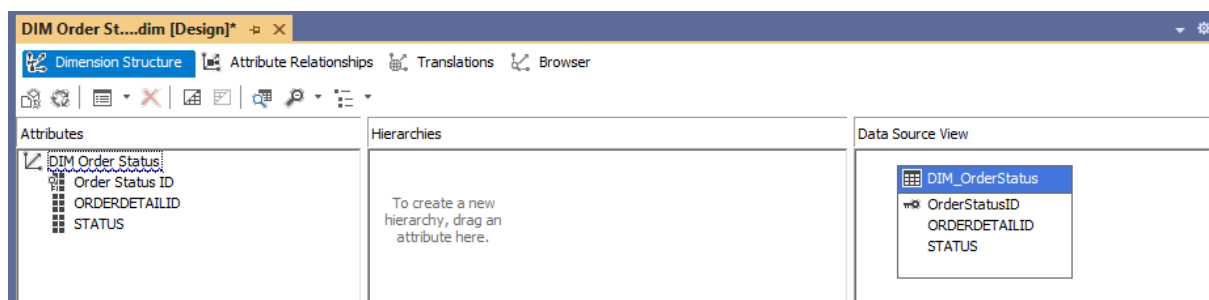


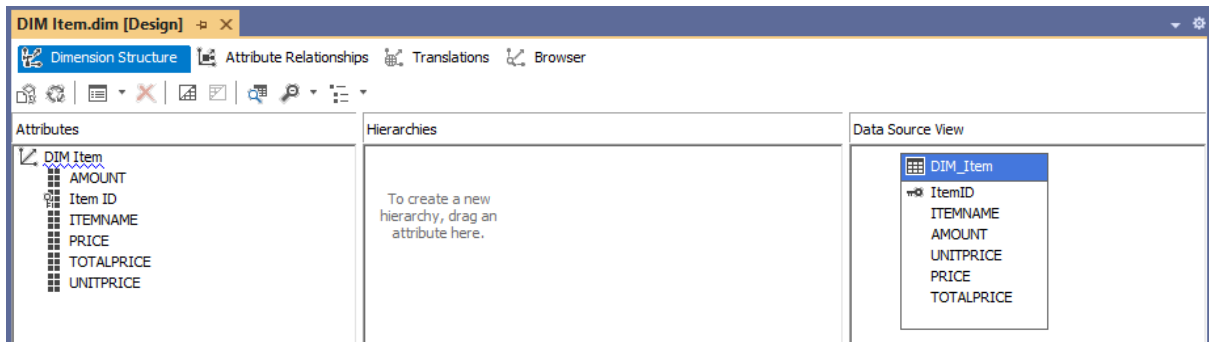
Figure 5-16 Edit DimCategory

## Edit DimOrderStatus



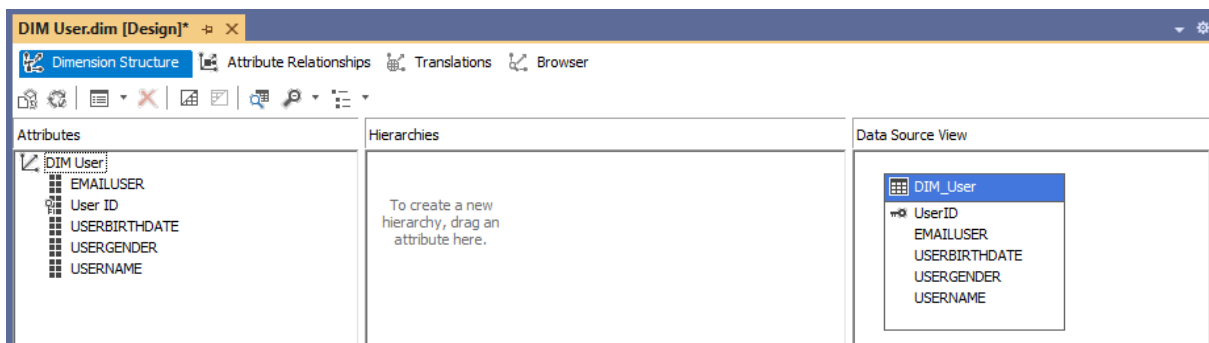
**Figure 5-17 Edit DimOrderStatus**

Edit DimItem



**Figure 5-18 Edit DimItem**

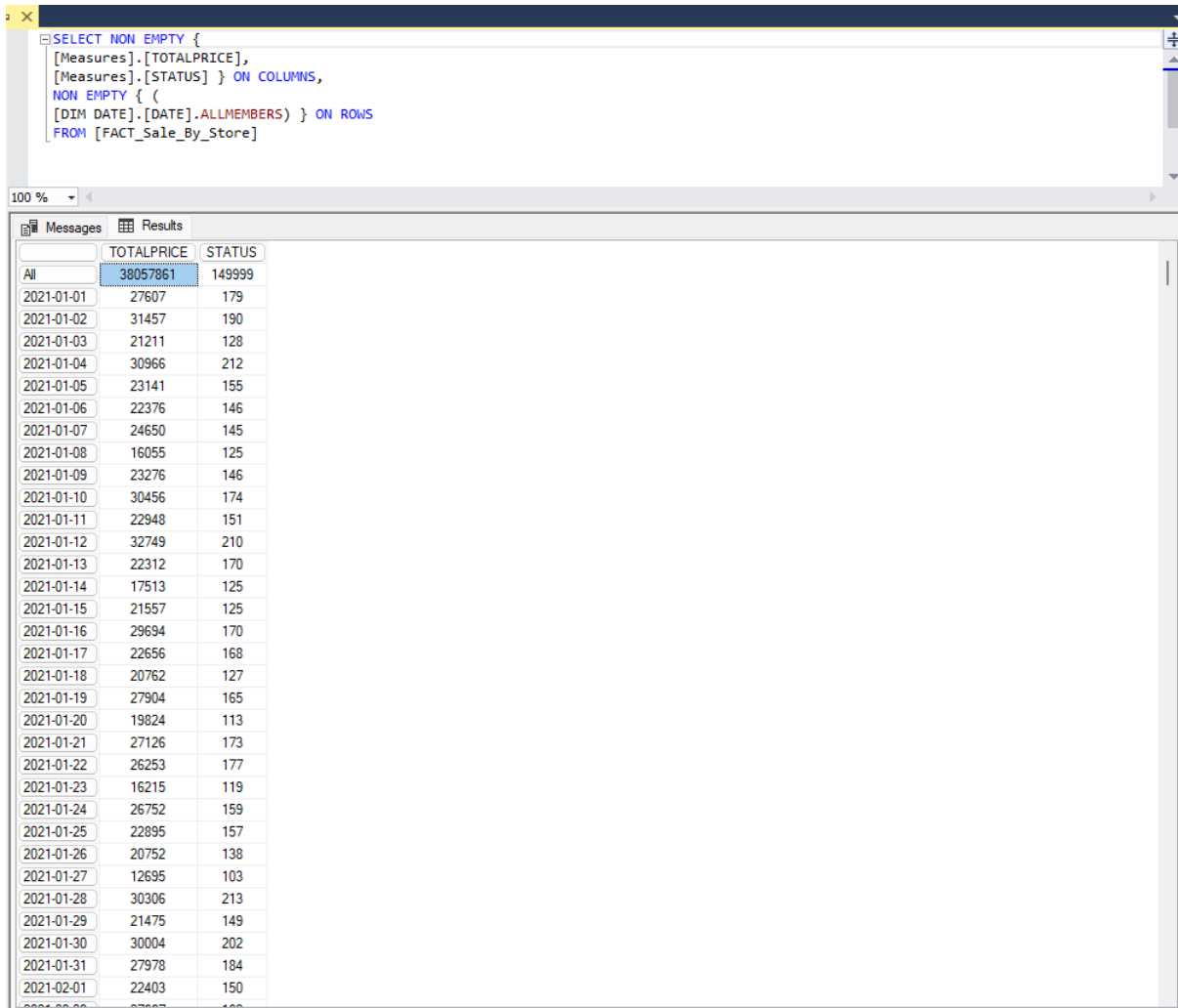
Edit DimUser



**Figure 5-19 Edit DimUser**

## 5.5 MDX Query

### 5.5.1 Total daily revenue of the store by status



```
SELECT NON EMPTY {  
    [Measures].[TOTALPRICE],  
    [Measures].[STATUS] } ON COLUMNS,  
    NON EMPTY { (  
        [DIM DATE].[DATE].ALLMEMBERS) } ON ROWS  
FROM [FACT_Sale_By_Store]
```

	TOTALPRICE	STATUS
All	38057861	149999
2021-01-01	27607	179
2021-01-02	31457	190
2021-01-03	21211	128
2021-01-04	30966	212
2021-01-05	23141	155
2021-01-06	22376	146
2021-01-07	24650	145
2021-01-08	16055	125
2021-01-09	23276	146
2021-01-10	30456	174
2021-01-11	22948	151
2021-01-12	32749	210
2021-01-13	22312	170
2021-01-14	17513	125
2021-01-15	21557	125
2021-01-16	29694	170
2021-01-17	22656	168
2021-01-18	20762	127
2021-01-19	27904	165
2021-01-20	19824	113
2021-01-21	27126	173
2021-01-22	26253	177
2021-01-23	16215	119
2021-01-24	26752	159
2021-01-25	22895	157
2021-01-26	20752	138
2021-01-27	12695	103
2021-01-28	30306	213
2021-01-29	21475	149
2021-01-30	30004	202
2021-01-31	27978	184
2021-02-01	22403	150

Figure 5-20 Total daily revenue of the store by status

## 5.5.2 Top 5 Stores with the Highest Sales Volume and Revenue

The screenshot displays the SQL Server Enterprise Manager interface. The top pane shows a query titled 'FACT\_Sale\_By\_Store [Browse]'. The query is a MDX statement designed to retrieve the top 5 stores based on the sum of total price and amount. The bottom pane shows the 'Results' tab with a table of data.

```
SELECT NON EMPTY {  
    [Measures].[TOTALPRICE],  
    [Measures].[AMOUNT]  
} ON COLUMNS,  
NON EMPTY {  
    TOPCOUNT(  
        [DIM Store].[STORE].ALLMEMBERS,  
        5,  
        [Measures].[TOTALPRICE] + [Measures].[AMOUNT]  
    )  
} ON ROWS  
FROM [FACT_Sale_By_Store]
```

	TOTALPRICE	AMOUNT
All	38057861	674632
OYUNCAK	8497776	56494
GEZER	2373382	32890
KITAPLAR	2175598	66825
KIRTASIYELER	1797995	75734

At the bottom of the window, a status bar shows the following information: VUONGBA1403 | VUONGBA1403\vuong | SSASDTWH | 00:00:01

Figure 5-21 Top 5 store with the highest sale volume and revenue

### 5.5.3 Total Number Of Category Sold

Cube: FACT

Measures: [FACT Sale Count] ON COLUMNS,  
NON EMPTY

[DIM Category].[CATEGORY1].[CATEGORY1].ALLMEMBERS \*  
[DIM Category].[CATEGORY2].[CATEGORY2].ALLMEMBERS \*  
[DIM Category].[CATEGORY3].[CATEGORY3].ALLMEMBERS \*  
[DIM Category].[CATEGORY4].[CATEGORY4].ALLMEMBERS ON ROWS

FROM [FACT\_Sale];

100 %

Messages Results

				FACT Sale Count
BALIK	BEYAZ ETLER	TON BALIGI	KONSERVE	1
BEBEK	BEBE MALZEMELERI	BEBEK BAKIM	EMZIK	1
BEBEK	BEBE MALZEMELERI	BEBEK BAKIM	GOGUS KORUYUCU	1
BEBEK	BEBE MALZEMELERI	COCUK BEZLERI	STANDART PAKET	7
BEBEK	HAZIR YEMEK-MAMA	HAZIR COCUK YEMEKLERI	HAZIR MAMALAR	5
BEBEK	IC GIYIM	CORAPLAR	COCUK CORAP	2
BEBEK	TEKSTIL-GIYIM-AKSESUAR	CAMASIRLAR	COCUK CAMASIR	1
CAY-KAHVE-SEKER	GAZSIZ ICECEK	CAY	DEMLIK	1
CAY-KAHVE-SEKER	GAZSIZ ICECEK	CAY	DOKME	2
CAY-KAHVE-SEKER	GUNLUK ICECEK	SUT TOZU VE KREMA	KAHVE KREMASI	1
DETERJAN	BULASIK YIKAMA	BULASIK MAKINASI URUNLERI	JEL	3
DETERJAN	BULASIK YIKAMA	BULASIK MAKINASI URUNLERI	PARLATICI	1

Query executed successfully. VUONGBA1403 VUONGBA1403\vuong SSASDTWH 00:00:01

Figure 5-22 Total number of category sold



### 5.5.4 Number of order by gender of the customer

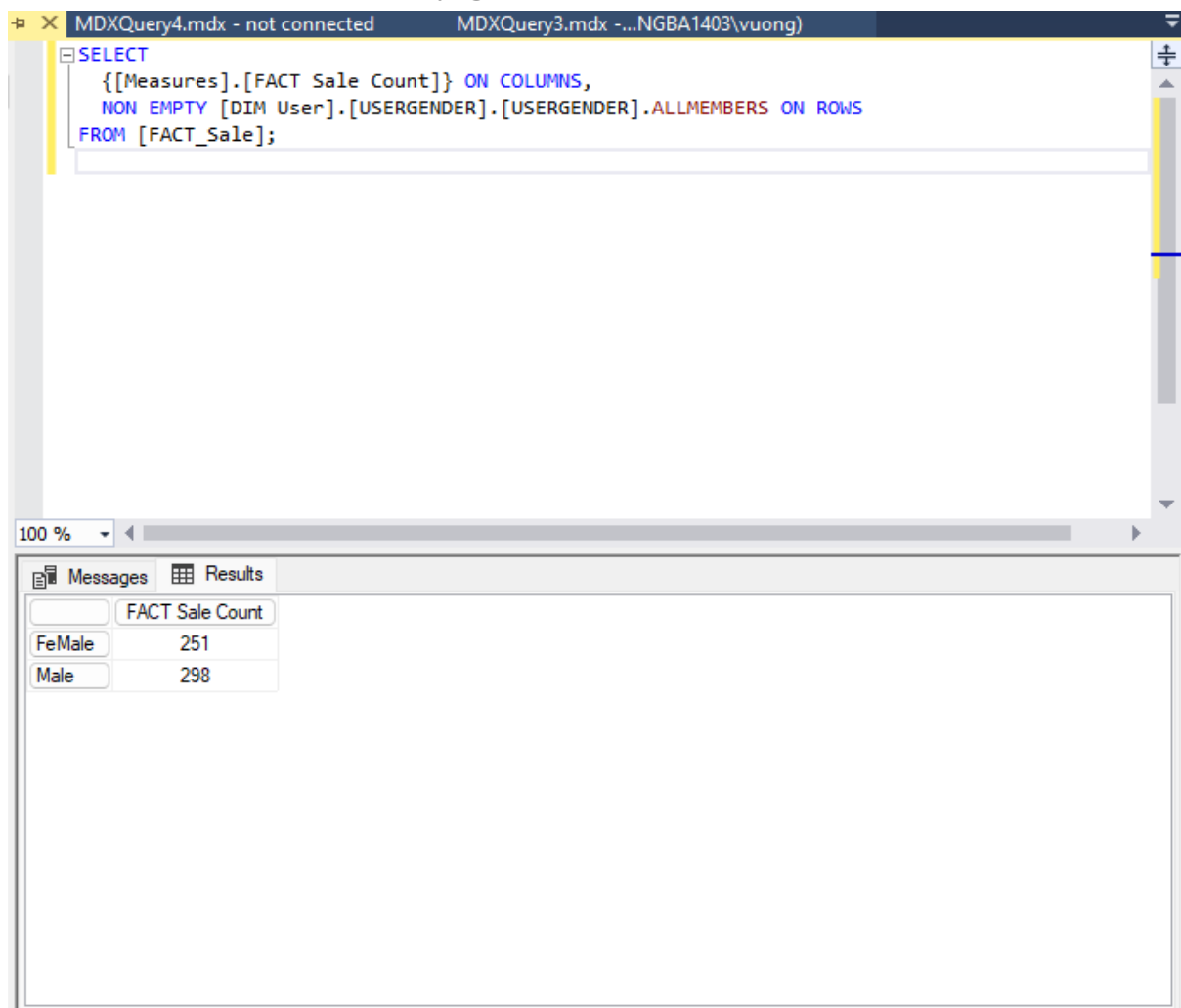


Figure 5-23 Number of the order by gender of the customer

### 5.5.5 Top 10 Sales Days with the Highest Total Revenue

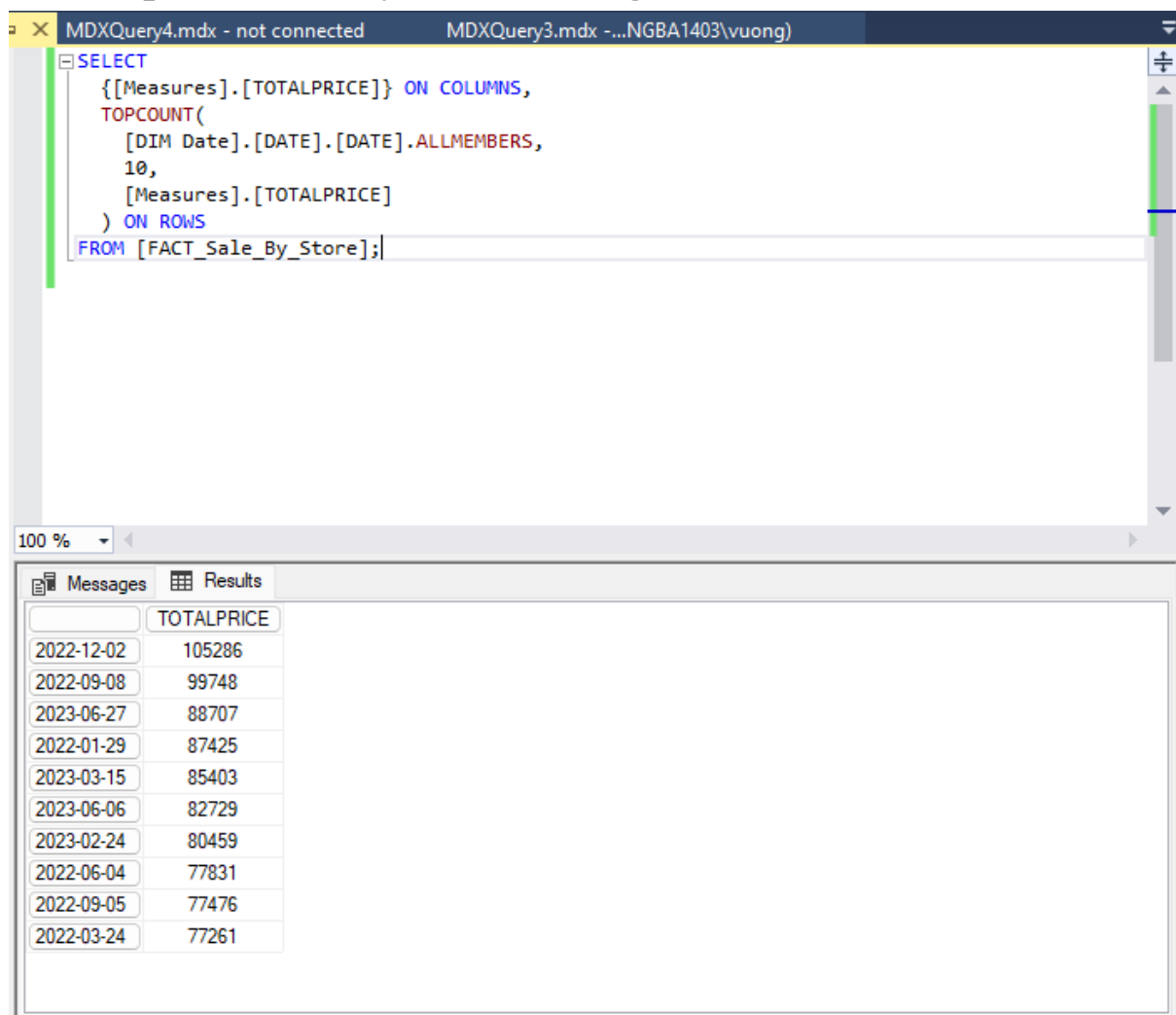
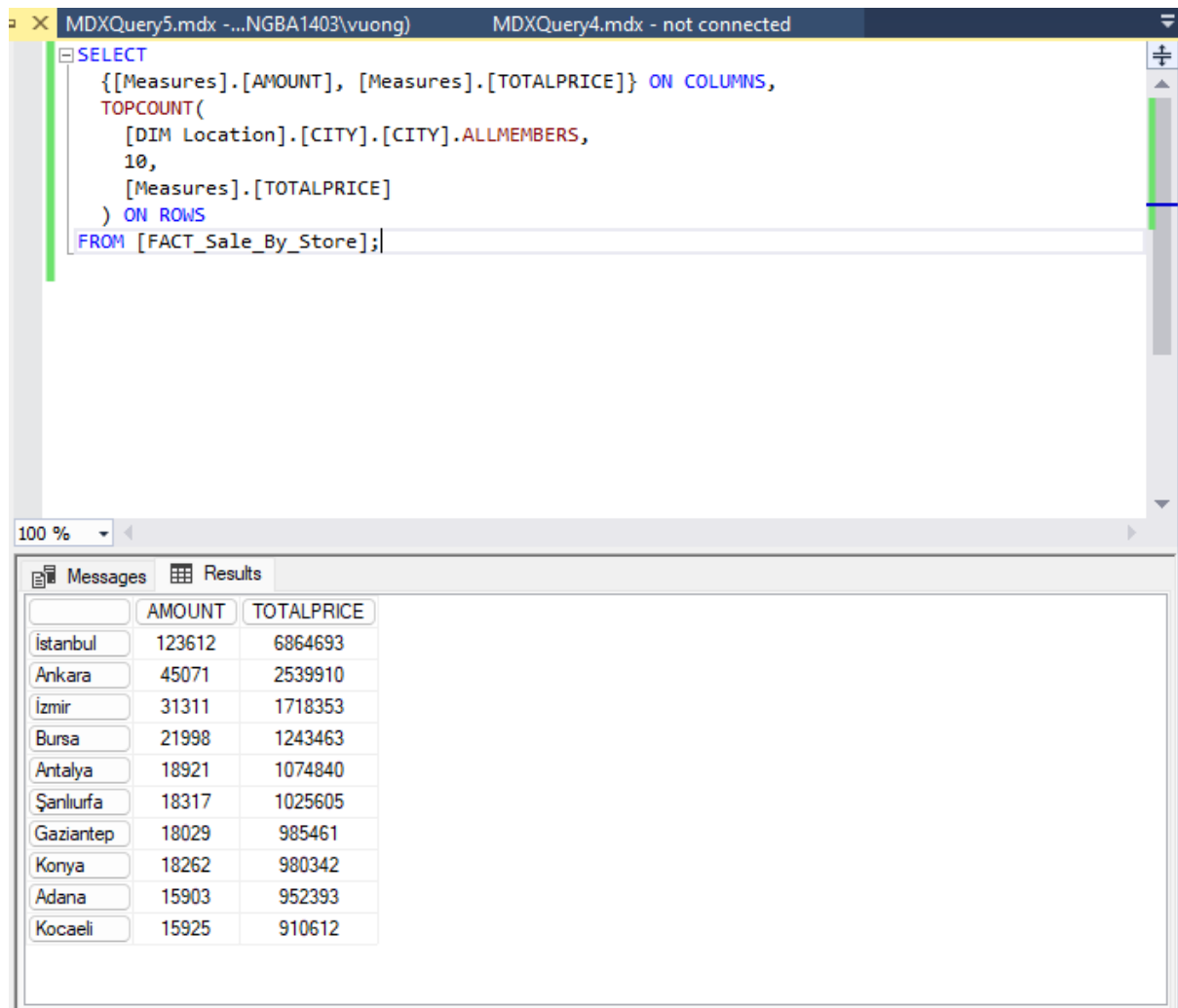


Figure 5-24 Top 10 Sales Days with the Highest Total Revenue

### 5.5.6 Top 10 Cities with the Highest Number of Orders and Total Revenue



**Figure 5-25 Top 10 Cities with the Highest Number of Orders and Total Revenue**

## 5.5.7 Top 10 Days With The Most Sales By Store

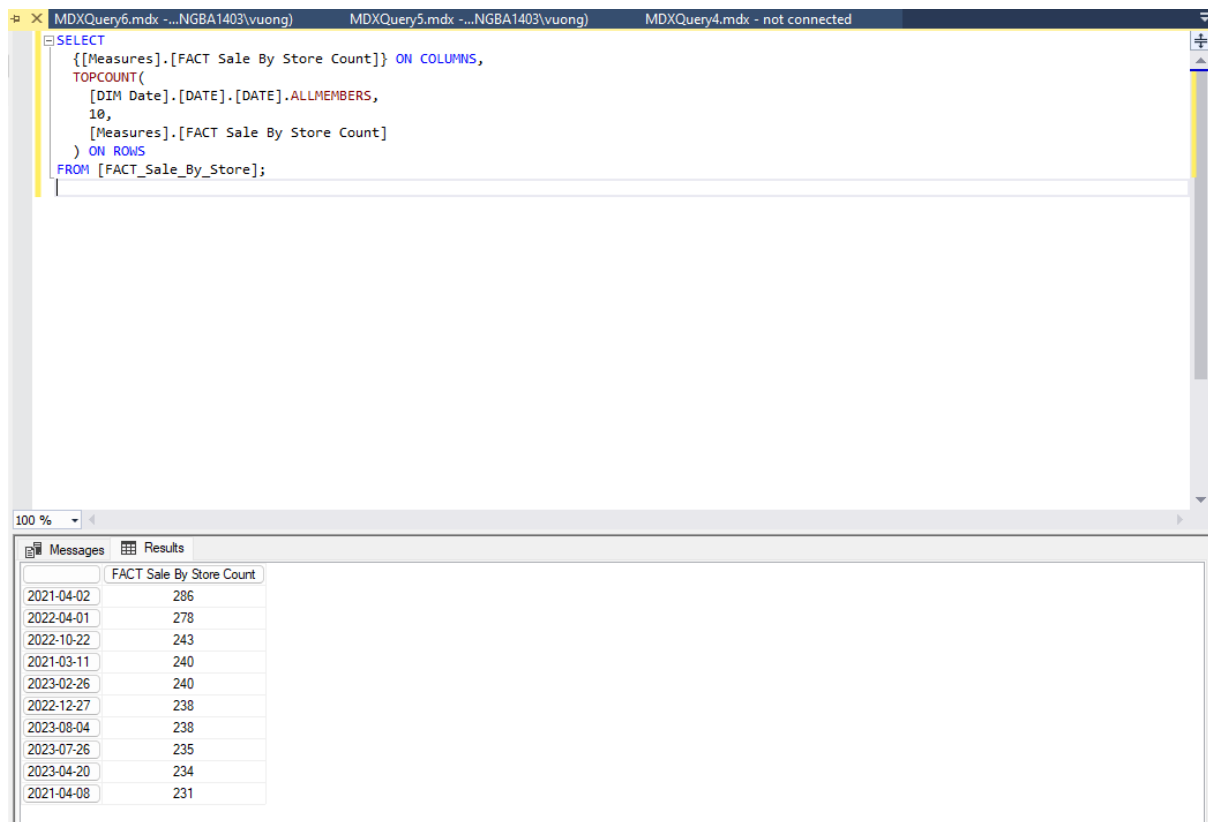


Figure 5-26 Top 10 Days With The Most Sales By Store

## 5.5.8 Top 5 Districts With The Highest Total Number Of Orderdetails

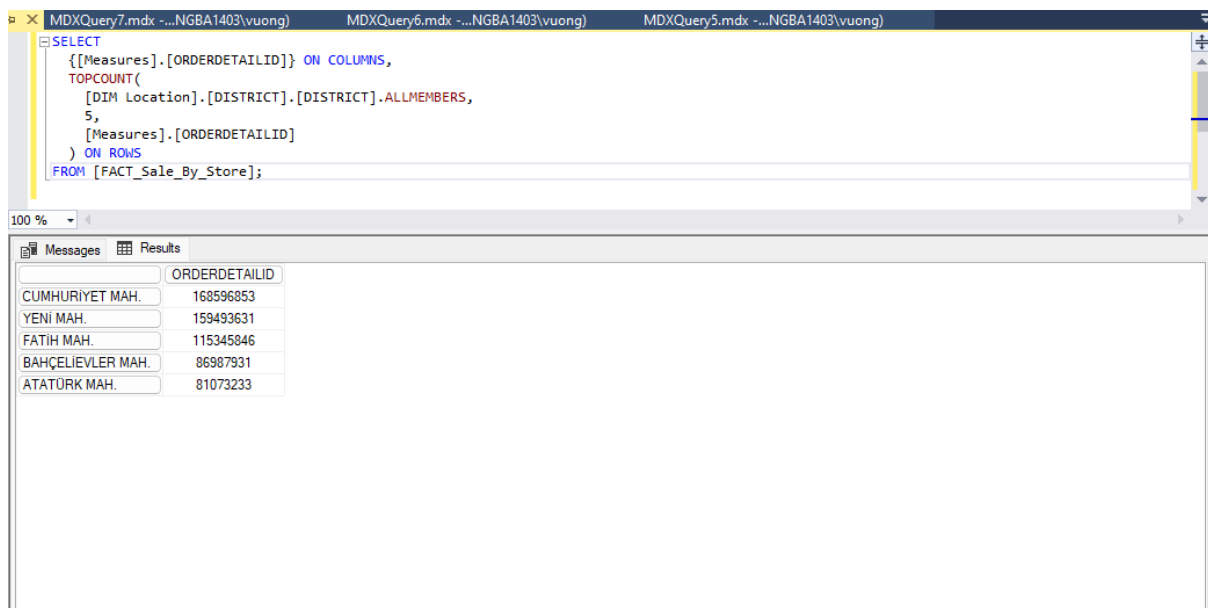
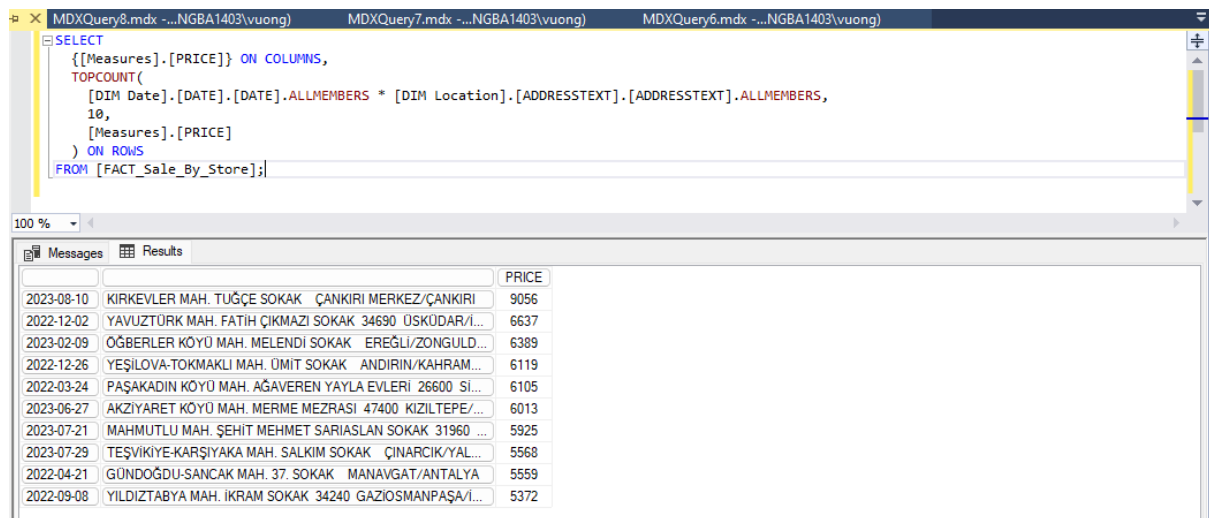


Figure 5-27 Top 5 Districts With The Highest Total Number Of Orderdetailse

## 5.5.9 Top 10 Addresstext Days With The Highest Selling Price Ever



```

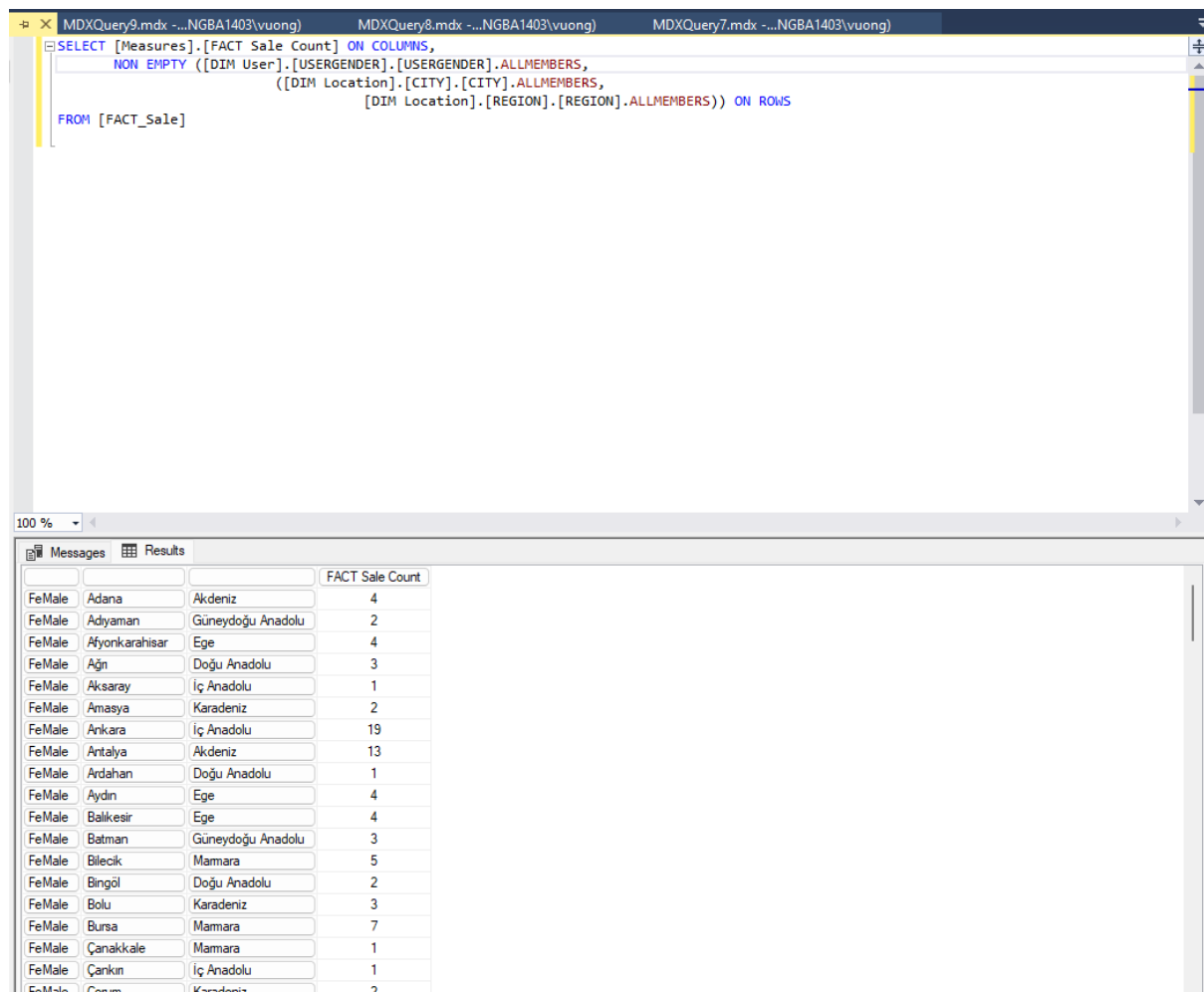
SELECT
{[Measures].[PRICE]} ON COLUMNS,
TOPCOUNT(
[DIM Date].[DATE].[DATE].ALLMEMBERS * [DIM Location].[ADDRESSTEXT].[ADDRESSTEXT].ALLMEMBERS,
10,
[Measures].[PRICE]
) ON ROWS
FROM [FACT_Sale_By_Store];

```

DATE	ADDRESSTEXT	PRICE
2023-08-10	KIRKEVLER MAH. TUĞÇE SOKAK ÇANKIRI MERKEZ/ÇANKIRI	9056
2022-12-02	YAVUZTÜRK MAH. FATİH ÇIKMAZI SOKAK 34690 ÜSKÜDAR/İ...	6637
2023-02-09	OĞBERLER KÖYÜ MAH. MELENDİ SOKAK EREĞLİ/ZONGUL...	6389
2022-12-26	YEŞİLOVA-TOKMAKLI MAH. ÜMIT SOKAK ANDIRIN/KAHRAM...	6119
2022-03-24	PAŞAKADIN KÖYÜ MAH. AĞAVEREN YAYLA EVLERİ 26600 Sİ...	6105
2023-06-27	AKZIYARET KÖYÜ MAH. MERME MEZRASI 47400 KIZILTEPE/...	6013
2023-07-21	MAHMUTLU MAH. ŞEHİT MEHMET SARIASLAN SOKAK 31960 ...	5925
2023-07-29	TEŞVİKİYE-KARŞIYAKA MAH. SALKIM SOKAK ÇINARCIK/YAL...	5568
2022-04-21	GÜNDOĞDU-SANCAK MAH. 37. SOKAK MANAVGAT/ANTALYA	5559
2022-09-08	YILDIZTABA MAH. IKRAM SOKAK 34240 GAZİOSMANPAŞA/İ...	5372

Figure 5-28 Top 10 Addresstext Days With The Highest Selling Price Ever

## 5.5.10 Number Of Genders Of Shoppers In City And Region



```

SELECT [Measures].[FACT Sale Count] ON COLUMNS,
NON EMPTY ([DIM User].[USERGENDER].[USERGENDER].ALLMEMBERS,
([DIM Location].[CITY].[CITY].ALLMEMBERS,
[DIM Location].[REGION].[REGION].ALLMEMBERS)) ON ROWS
FROM [FACT_Sale]

```

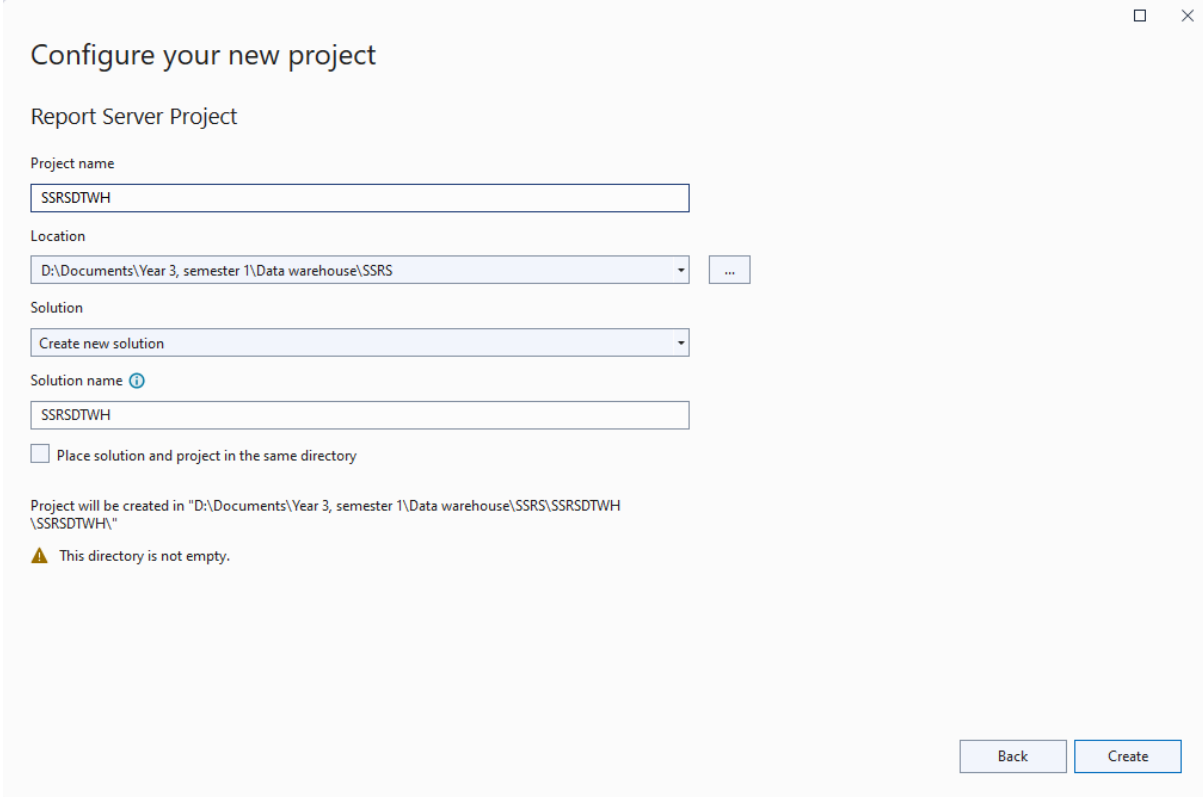
USERGENDER	CITY	REGION	FACT Sale Count
FeMale	Adana	Akdeniz	4
FeMale	Adıyaman	Güneydoğu Anadolu	2
FeMale	Afyonkarahisar	Ege	4
FeMale	Ağrı	Doğu Anadolu	3
FeMale	Aksaray	İç Anadolu	1
FeMale	Amasya	Karadeniz	2
FeMale	Ankara	İç Anadolu	19
FeMale	Antalya	Akdeniz	13
FeMale	Ardahan	Doğu Anadolu	1
FeMale	Aydın	Ege	4
FeMale	Balıkesir	Ege	4
FeMale	Batman	Güneydoğu Anadolu	3
FeMale	Bilecik	Marmara	5
FeMale	Bingöl	Doğu Anadolu	2
FeMale	Bolu	Karadeniz	3
FeMale	Bursa	Marmara	7
FeMale	Çanakkale	Marmara	1
FeMale	Çankırı	İç Anadolu	1
FeMale	Çorum	Karadeniz	2

Figure 5-29 Number Of Genders Of Shoppers In City And Region

## Chapter 6: SSRS Process

### 6.1 Prepare tools

#### Create new “SSRSDTWH”



Configure your new project

Report Server Project

Project name  
SSRSDTWH

Location  
D:\Documents\Year 3, semester 1\Data warehouse\SSRS

Solution  
Create new solution

Solution name ⓘ  
SSRSDTWH

☐ Place solution and project in the same directory

Project will be created in "D:\Documents\Year 3, semester 1\Data warehouse\SSRS\SSRSDTWH\SSRSDTWH"

⚠ This directory is not empty.

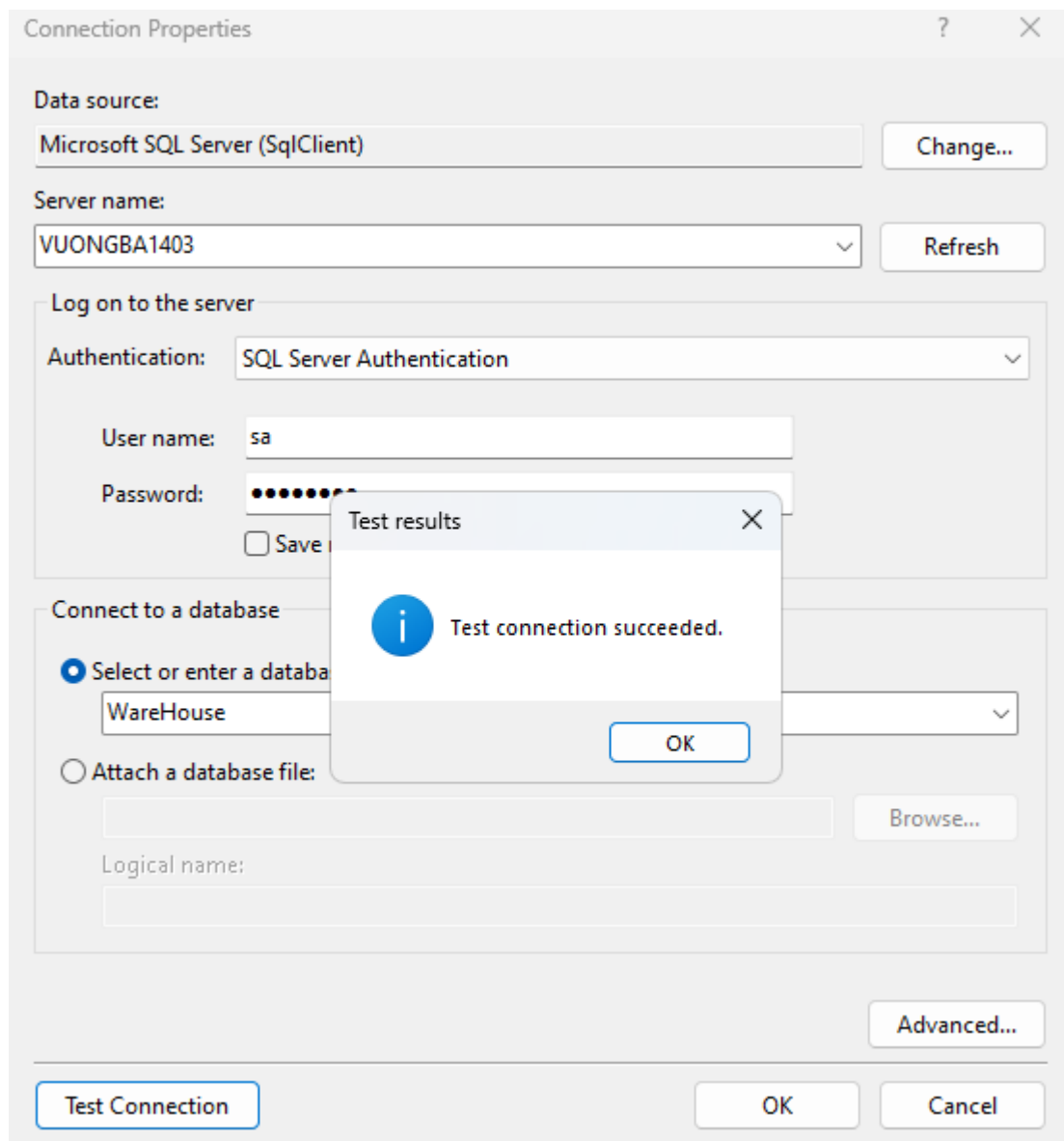
Back Create

Figure 6-1 Create new “SSRSDTWH”

### 6.2 Implementation process

#### 6.2.1 Connect to Database

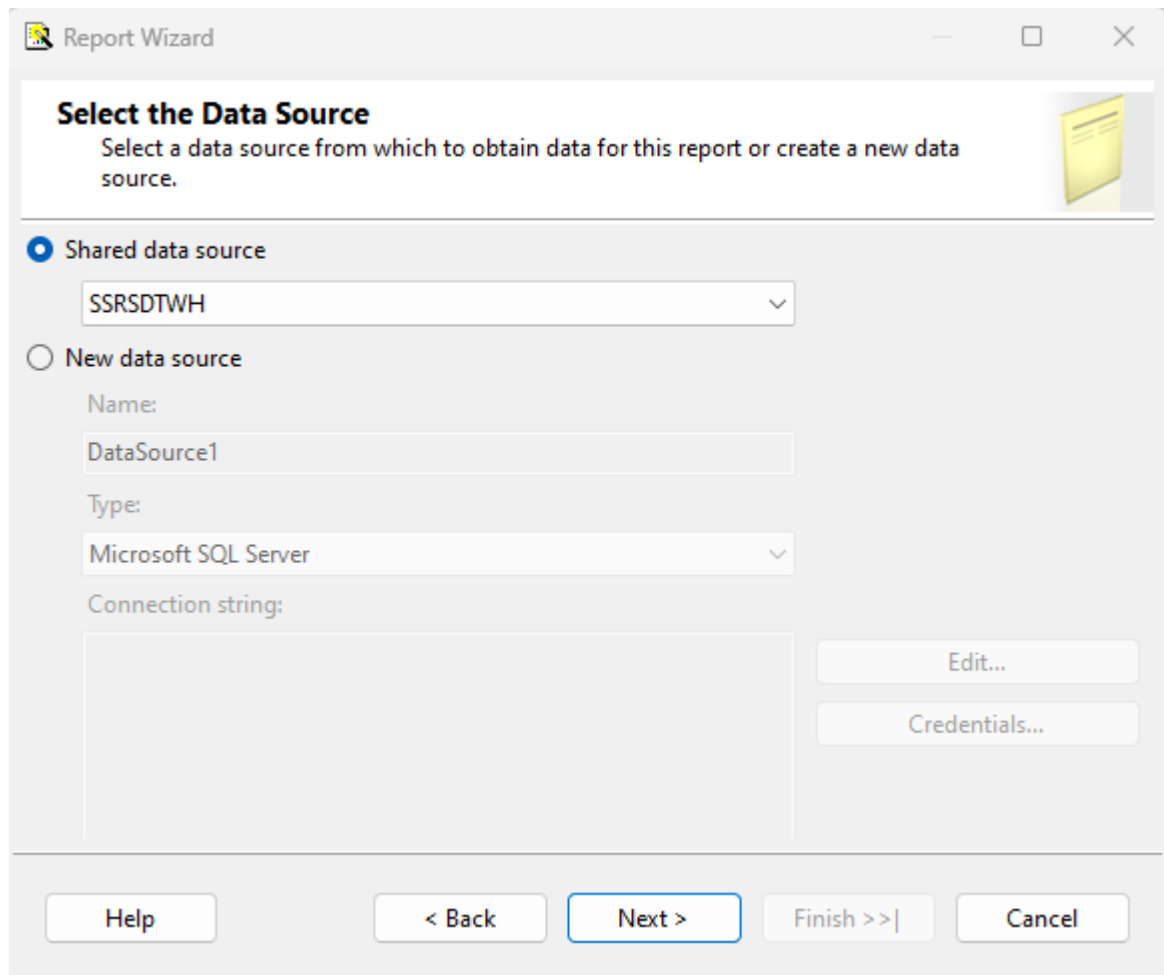
Test connection succeeded.



**Figure 6-2 Test connection succeeded**

## **6.2.2 Create Report**

Select Report :

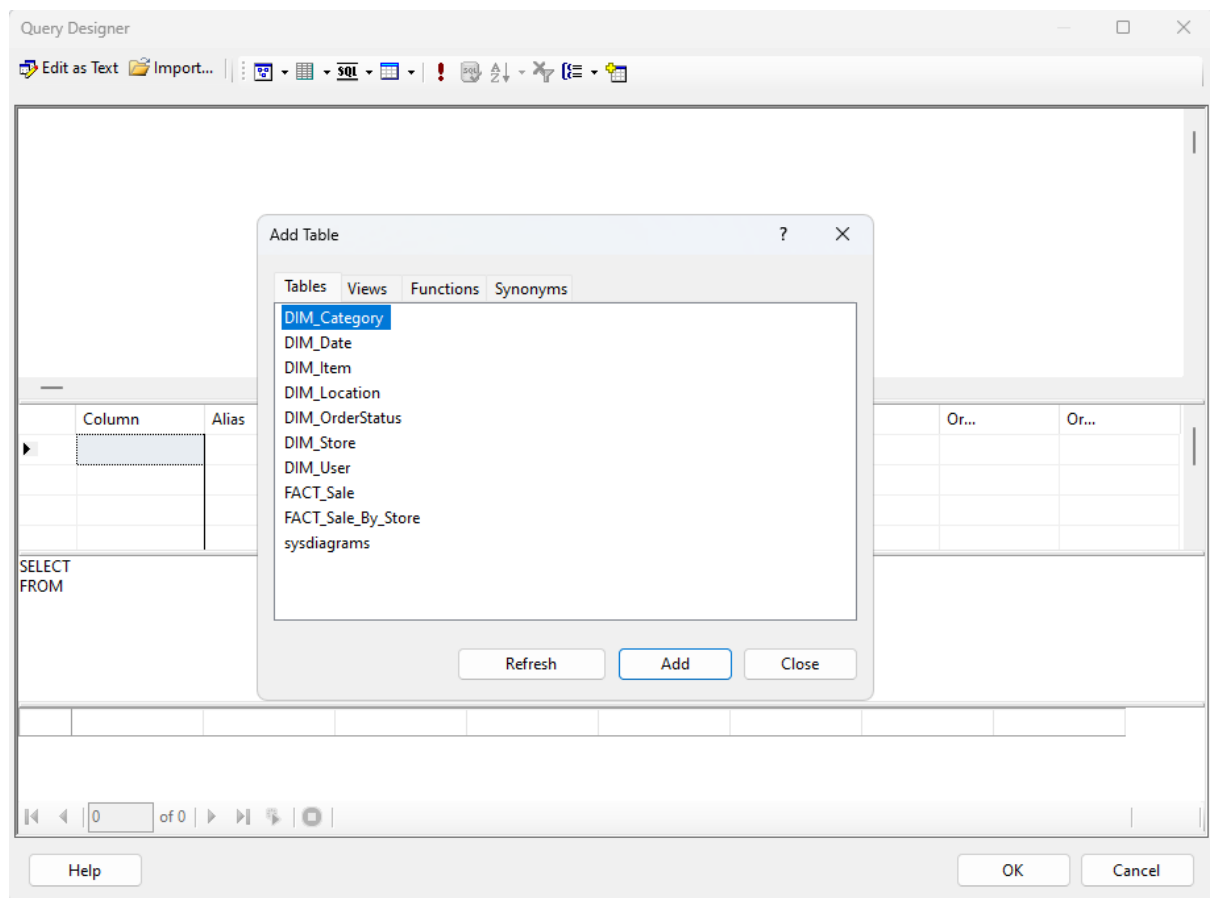


**Figure 6-3 Select Report**

Design Query :

Add the tables for which we want to create reports





**Figure 6-4 Add the tables for which we want to create reports**

## **6.3 Reports**

### **6.3.1 Total revenue per day by status**

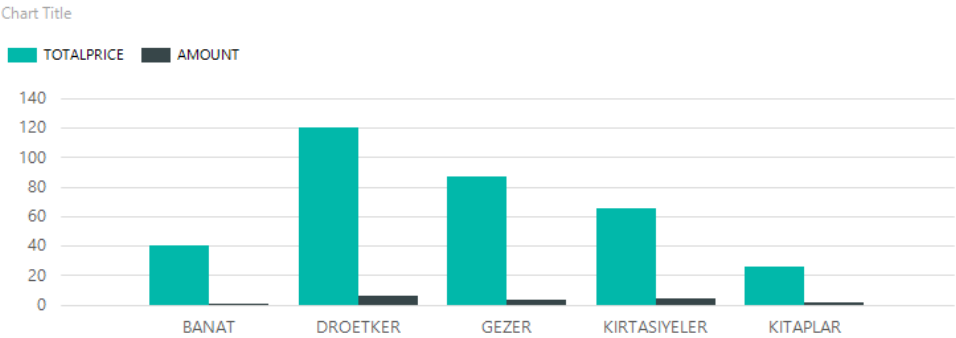
Total daily revenue of the store by status		
STATUS	TOTALPRICE	DATE
1	455	2023-05-09
1	73	2023-05-09
1	92	2023-05-09
1	63	2023-01-27
1	431	2023-01-27
1	632	2023-01-27
1	172	2023-01-27
1	2	2023-01-27
1	145	2023-01-27
1	1320	2023-01-27
1	749	2023-01-27
1	164	2022-08-07
1	268	2022-08-07
1	88	2022-08-07
1	8	2022-08-07
1	454	2022-08-07
1	56	2022-08-07
1	212	2022-08-07
1	151	2021-10-08
1	131	2021-10-08
1	357	2023-01-27
1	159	2023-01-27
1	40	2023-01-27
1	302	2023-01-27
1	169	2023-01-27
1	23	2023-01-27

**Figure 6-5 Report total revenue per day by status**

### **6.3.2 Top 5 Stores with the Highest Sales Volume and Revenue**

# Top 5 Stores with the Highest Sales Volume and Revenue

TOTALPRICE	AMOUNT	STORE
120	6	DROETKER
40	1	BANAT
87	3	GEZER
65	4	KIRTASIYELER
26	2	KITAPLAR



**Figure 6-6 Report top 5 Stores with the Highest Sales Volume and Revenue**

### 6.3.3 Total Number Of Category Sold

Total Number Of Category Sold			
CATEGORY1	CATEGORY2	CATEGORY3	CATEGORY4
EV	MUTFAK GERECLERI	MUTFAK ESYA-GERECLERI	
EV	MUTFAK GERECLERI	MUTFAK ESYA-GERECLERI	
TEMIZLIK	EV TEMIZLEYICILER	HASERE OLDURUCULER	SIVI SPREYLER
KAHVALTILIK	SUT-YOGURT-PEYNIR	PEYNIRLER	BEYAZ PEYNIRLER
GIDA	CORBA-BULYON	CORBALAR	HAZIR CORBA
GIDA	CORBA-BULYON	CORBALAR	HAZIR CORBA
GIDA	CORBA-BULYON	CORBALAR	HAZIR CORBA
GIDA	CORBA-BULYON	CORBALAR	HAZIR CORBA
GIDA	CORBA-BULYON	CORBALAR	HAZIR CORBA
GIDA	CORBA-BULYON	CORBALAR	HAZIR CORBA
GIDA	CORBA-BULYON	CORBALAR	HAZIR CORBA
BEBEK	TEKSTIL-GIYIM-AKSESUAR	CAMASIRLAR	COCUK CAMASIR
KUMES	PILIC	KUMES HAYVANLARI	PARCA INCIK
EV	MUTFAK GERECLERI	MUTFAK ESYA-GERECLERI	SOYUCU
KAGIT	ISLAK MENDIL-HAVLULAR	ISLAK HAVLU	BEYAZ
EV	MUTFAK GERECLERI	MUTFAK ESYA-GERECLERI	PLASTIK
DETERJAN	CAMASIR YIKAMA	CAMASIR SULARI	ULTRA
DETERJAN	CAMASIR YIKAMA	CAMASIR SULARI	ULTRA
KOZMETIK	AGDA-TUY DOKUCULER	AGDALAR	AGDA BANTLARI
SEKERLEME	SAKIZ-SEKERLEME	SEKERLEMELER	YUMUSAK SEKER
SEKERLEME	SAKIZ-SEKERLEME	SEKERLEMELER	YUMUSAK SEKER
SEKERLEME	SAKIZ-SEKERLEME	SEKERLEMELER	YUMUSAK SEKER
SEKERLEME	SAKIZ-SEKERLEME	SEKERLEMELER	YUMUSAK SEKER
MEYVE	MANAV	MANAV	MEYVELER
MEYVE	MANAV	MANAV	MEYVELER
SEKERLEME	SAKIZ-SEKERLEME	SAKIZ	SAKIZLAR
SEKERLEME	SAKIZ-SEKERLEME	SAKIZ	SAKIZLAR
SEKERLEME	SAKIZ-SEKERLEME	SAKIZ	SAKIZLAR
SEKERLEME	SAKIZ-SEKERLEME	SAKIZ	SAKIZLAR
SEKERLEME	SAKIZ-SEKERLEME	SAKIZ	SAKIZLAR
SEKERLEME	SAKIZ-SEKERLEME	SAKIZ	SAKIZLAR
KAHVALTILIK	KAHVALTILIK GEVREK	KAHVALTILIK GEVREK-MUSLI	SADE
KUMES	PILIC	KUMES HAYVANLARI	PARCA SOSLU PIRZOLA
ET	ISLENMIS ET	SUCUK	DANA SUCUK
ET	ISLENMIS ET	SUCUK	DANA SUCUK
KOZMETIK	AGIZ BAKIM	DIS MACUNLARI	MACUNLAR

**Figure 6-7 Report total Number Of Category Sold**

### 6.3.4 Top 10 people with the most total purchases over each day

Top 10 people with the most total purchases over each day

USERNAME	DATE	TOTALPRICE
Ayaz AYÖRDÜ	2023-08-14	333
Şenol Dursun ÖMÜR	2023-08-14	333
Derin NAMLI	2023-08-14	333
Mete TOPALCI	2023-08-14	333
Sebahat Nimet ORHAN	2023-08-14	333
Döndü TURUNÇ	2023-08-14	333
Nazlı URASLI	2023-08-14	333
Ceylin Asmin ÖZTÜNÇ	2023-08-14	333
Salim VARİYENLİ	2023-08-14	333
Mesut Melih TURGAL	2023-08-14	333

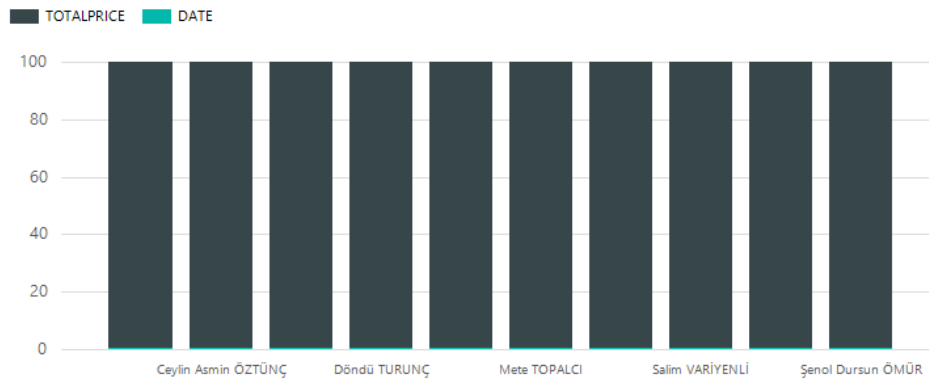


Figure 6-8 Report Top 10 people with the most total purchases over each day

### 6.3.5 Top 10 Cities with the Highest Number of Orders and Total Revenue

#### Top 10 Cities with the Highest Number of Orders and Total Revenue

CITY	AMOUNT	TOTALPRICE
Ankara	8	1291
Düzce	8	46
Tekirdağ	8	90
Aydın	8	83
Gaziantep	8	517
Kırşehir	8	43
Ankara	8	139
Kırşehir	8	1816
Samsun	8	127
Ankara	8	366

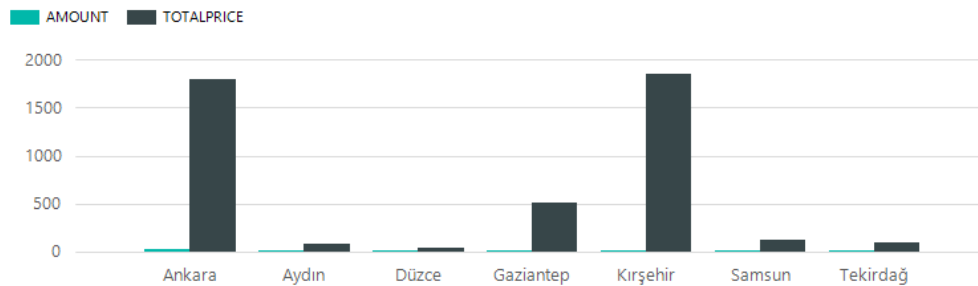


Figure 6-9 Report top 10 Cities with the Highest Number of Orders and Total Revenue

### 6.3.6 Number of items sold per day by the store

Number of items sold per day by the store		
DATE	ITEMNAME	AMOUNT
2021-12-20	DR.OETKER CREME OLE C.FIN.125GR*24*	6
2021-12-20	BANAT KLOZET FIR.KARE MUHA.*24*	1
2021-12-20	GEZER KOLLEKSIYON 6163000	3
2021-12-20	BENTEN KALEMLIK BNK0344	4
2021-11-01	AFACAN 5 LER DEFINE ADASINDA	2
2021-04-28	OYUNCAK PUZZLE 160 PARCA MINNIE MAUSE	3
2021-04-28	DERGI DERIN EKONOMI	5
2021-04-28	PASTEL OJE 08	2
2021-04-28	KITAP DIRILIS BIR MİLLETİN UYANISI	7
2021-04-28	OYUNCAK MELISSA BEBEK	2
2021-04-28	PAKMAYA PUD.NARLI 85 GR. 2X12	6
2021-04-28	PENTI 15 DEN FIT KILOTLU 38-3	4
2021-04-28	CEM 22 CM TAVA	8
2023-03-29	KITAP NEYE NASIL İNANIRIM	1
2023-03-29	MILKA HAPY COWS 100 GR *21*	3

**Figure 6-10 Report top items sold per day by the store**

### 6.3.7 Top 10 types of products that most people buy every day

#### Top 10 types of products that most people buy every day

CATEGORY1	CATEGORY2	CATEGORY3	CATEGORY4	USERNAME	DATE
SEKERLEME	CIKOLATA-GOFRET	GOFRET	SUTLU	Tugay Yakup TULUCE	2021-12-20
EV	MUTFAK GERECLERI	MUTFAK ESYA-GERECLERI	DIGER SERVIS GERECLERI	Tugay Yakup TULUCE	2021-12-20
EV	TEKSTIL-GIYIM-AKSESUAR	CORAPLAR	ERKEK CORAP	Tugay Yakup TULUCE	2021-12-20
EV	MUTFAK GERECLERI	MUTFAK ESYA-GERECLERI		Tugay Yakup TULUCE	2021-12-20
KOZMETIK	AGIZ BAKIM URUNLERI	AGIZ SULARI	DIS VE AGIZ SULARI	Tugay Yakup TULUCE	2021-12-20
TEMIZLIK	EV TEMIZLEYICILER	HASERE OLDURUCULER	SIVI SPREYLER	Tugay Yakup TULUCE	2021-12-20
ET	ISLENMIS ET	SUCUK	HINDI SUCUK	Tugay Yakup TULUCE	2021-12-20
GIDA	DONUK URUNLER	DONDURULMUS GIDA	BURGER	Tugay Yakup TULUCE	2021-12-20
EV	MUTFAK GERECLERI	MUTFAK ESYA-GERECLERI	CAY KASIGI-KARISTIRICI	Tugay Yakup TULUCE	2021-12-20
KAHVALTILIK	SUT-YOGURT-PEYNIR	PEYNIRLER	BEYAZ PEYNIRLER	Tugay Yakup TULUCE	2021-12-20

**Figure 6-11 Report Top 10 types of products that most people buy every day**



### 6.3.8 Top 10 best-selling items by store



**Figure 6-12 Report Top 10 best-selling items by store**

## **Chapter 7: Conclusion**

### **7.1 Conclusion**

#### **7.1.1 Achievements**

The endeavor of designing a Sales Management Data Warehouse has been a transformative journey, marked by notable achievements that hold significant implications for modern businesses:

**Integration of Diverse Data Streams:** The designed data warehouse adeptly amalgamated data from multifaceted sources including CRM systems, sales platforms, marketing databases, and financial records. This consolidation provided a comprehensive and coherent perspective on sales-related information across various channels and dimensions.

**Empowerment of Analytical Capabilities:** The Sales Management Data Warehouse facilitated advanced analytics and reporting, enabling in-depth examination of sales trends, customer behaviors, product performance, and market dynamics. The provision of both standardized and customized reporting empowered stakeholders with insightful perspectives for informed decision-making.

**Enhanced Decision Support:** A key achievement lies in the invaluable insights generated through this data warehouse. Sales managers, strategists, and decision-makers gained the ability to assess sales performance, analyze customer preferences, and identify lucrative sales opportunities. These insights steered the refinement of sales strategies and optimized resource allocation for improved outcomes.

#### **7.1.2 Limitations**

While the pursuit of a Sales Management Data Warehouse has yielded remarkable achievements, certain limitations present challenges that warrant acknowledgment:

**Data Quality and Consistency Challenges:** The sources of sales-related data often vary in their formats, standards, and levels of granularity. This disparity may lead to inconsistencies in recording sales metrics, product categorizations, or customer information, potentially impacting the overall quality and reliability of the integrated data.

**Data Availability and Accessibility Hurdles:** Variations in data-sharing policies and access regulations among different sources pose challenges in acquiring comprehensive sales data. Restrictions or authorizations required for accessing certain data sources may impede the availability and accessibility of crucial information necessary for a comprehensive data warehouse.

**Data Privacy and Security Concerns:** Sales-related data often contains sensitive information such as customer details, financial transactions, or proprietary sales strategies. Safeguarding this information against breaches, adhering to privacy

regulations, and ensuring data security remain critical challenges demanding stringent measures to maintain ethical and legal compliance.

## **7.2 Development**

Looking ahead, continuous efforts and strategic initiatives are imperative to address the limitations and further enhance the effectiveness of the Sales Management Data Warehouse:

**Data Quality Enhancement Strategies:** Implementing standardized data formats, refining data validation processes, and establishing robust data governance practices can substantially improve the quality and consistency of integrated sales data.

**Collaborative Data Sharing Initiatives:** Fostering collaborations and negotiations with data sources to harmonize access protocols, streamline data sharing policies, and create agreements for more accessible and comprehensive data acquisition.

**Investment in Data Security Measures:** Continued investment in advanced encryption, access control mechanisms, and compliance with stringent data protection laws will be pivotal in ensuring the privacy and security of sales-related information.

The ongoing development and refinement efforts aimed at overcoming limitations will further bolster the potential of the Sales Management Data Warehouse, empowering businesses with comprehensive, reliable, and actionable insights for continued growth and success.