FACULTY OF COMPUTING & INFORMATION TECHNOLOGY
KING ABDULAZIZ UNIVERSITY

كلية الحاسبات وتقنية المعلومات
جامعة الملك عبدالعزيز

Final Report

Name: Shuruq Baabdullah

Student ID: 1906284

Company Name: Petromin, Exquitech

Year: 2022

Advisor: Dr. Abeer Hakeem

Information Technology Department

Acknowledgment

First and foremost, I want to thank, appreciate, and respect my team Norah Alahmary, and Rianah Alsudais for doing everything in their power to finish our training program in Petromin company and Exquitech this summer.

Mr. Ziad Tout, our information technology department supervisor, gave us a lot of assistance while we were training and deserves gratitude from all of us.

Also, Coach Rene who was ongoing support, counsel, and suggestions has been helpful to us and has helped to make our training at Petromin and Exquitech as seamless as possible.

My thanks and debt of gratitude goes to our supervisor in the faculty of computers and information technology, Dr. Abeer Hakeem for encouraging and supporting us during our summer training this year.

Lastly, I want to express my gratitude, especially, to our families for their love, support, and confidence throughout our training and all our life.

Abstract

This report will highlight my experiences from this year's summer training at the Petromin and Exquitech companies. The report goes into detail about my 8-week internship in Data and Business Intelligence and the report will include details regarding the training schedule, and what I have learned over the course of these eight weeks while working for Petromin and Exquitech, as well as my overall training for this summer. I'll go over each assignment in detail, including what they requested, what I performed, any challenges I encountered, how long each work took, and the overall training challenges.

Table of Contents

Table of Figers

List of Tables

Part one:

Introduction

Our summer training program provided us with the ideal opportunity to share our expertise because it is expanding our knowledge of real-world work situations. I am gratefully nominated by Petromin company to complete my summer training for this year because they have that program that will enhance our skills in the job market.

At first, they choose 6 girls from the information technology department, 5 girls from the information system department, and 3 girls from Jeddah university. Moreover, Petromin let us train with Exqiutech. They divide us into groups, the group I'm in is the "Data and Business intelligence" group with Mr. Rene Mouad as our coach in the training journey. He gave us tasks after finishing each course.

Finally, all students in the training have some tasks to finish. Also, Mr. Rene was helpful for us to learn more about Business intelligence and how to work with the data.

Training plan

My training plan on Exquitech is about “Data analysis and warehousing” from the data and business intelligence department which helps business marketing and decision making. We started the first Course on Power BI and then the course in ETL and after each course, there are exercises to ensure that we understand everything in the courses. Finally, there is a big task that contains creating a data warehouse, use ETL and SSIS packages, and then creating a Power BI dashboard.

Week	Work Description	Department	Start Date	Duration (hours)	Training Supervisor
1	Overview on the department and the tools needed	Data and Business Intelligence	2022-6-22	3	Rene Mouawad
2	Course on Power BI	Data and Business Intelligence	2022-6-22	6	Rene Mouawad
3	Power BI Training	Data and Business Intelligence	2022-6-23	5	Rene Mouawad
4	Course on Data Warehouse and ETL using SSIS with Exercises	Data and Business Intelligence	2022-6-27	6	Rene Mouawad
5	Power BI Challenges: (We will give them datasets and requirements so they can build dashboards on Power BI)	Data and Business Intelligence	2022-6-28	90	Rene Mouawad
6	Training on Power BI Service	Data and Business Intelligence	2022-7-19	4	Rene Mouawad
7	Advanced Power BI DAX and Dashboards	Data and Business Intelligence	2022-7-19	18	Rene Mouawad
8	They will implement a full solution: - Creating Data warehouse structure - Building ETL using SSIS - Build reports and dashboards on Power BI	Data and Business Intelligence	2022-7-24	90	Rene Mouawad
Total of hours				222	

Table 1: Training plan

Part two:

Summary of the first to fourth weeks

The supervisor gave me his account on Pluralsight so that I can watch the courses. Also, he gave me two courses to study the courses before starting the tasks:

- Microsoft Power Bi in Pluralsight [1]
- SSIS" SQL Server Integration Services" in Pluralsight [2]

Also, I needed more resources to understand the above topics because they were not enough, so I watched videos on YouTube:

- Power BI tutorial from beginner to pro desktop to a dashboard in 60 minutes [3]
- Create an ETL package with SSIS! step-by-step [4]

the supervisor taught us how to work with SSMT" SQL Server Management Services" and Microsoft visual studio for the SSIS.

In addition, I watched some extra courses that is not required for me, but they helped me in my journey to becoming a data analyst such as:

- Data Analytics: Hands-on [5]
- How to use Power BI DAX – tutorial [6]
- Beginning Power BI DAX Functions Tutorial [Full Course] [7]
- Common DAX" Data Analysis Expression and scenarios" in Power Bi [8]
- Fastest way to become a data analyst and get a job [9]
- How I would learn to be a data analyst [10]

Both courses above were from Pluralsight and videos on YouTube that related to how to analyze the data and more about Power Bi.

Moreover, the supervisor gave me and my team an exercise individually that require using Power Bi. The exercise was about how to transform data from Excel to Power Bi and must transform and reprocess "cleaning" the data before heading to analysis to make an interactive report that could help for decision-making and marketing, and more. Moreover, He gave us a paper with requirements and create a dashboard based on that paper. As a beginner in the business felid, I made a lot of mistakes, but I reworked the task and tried to improve it. You can see the result from the first task down below:

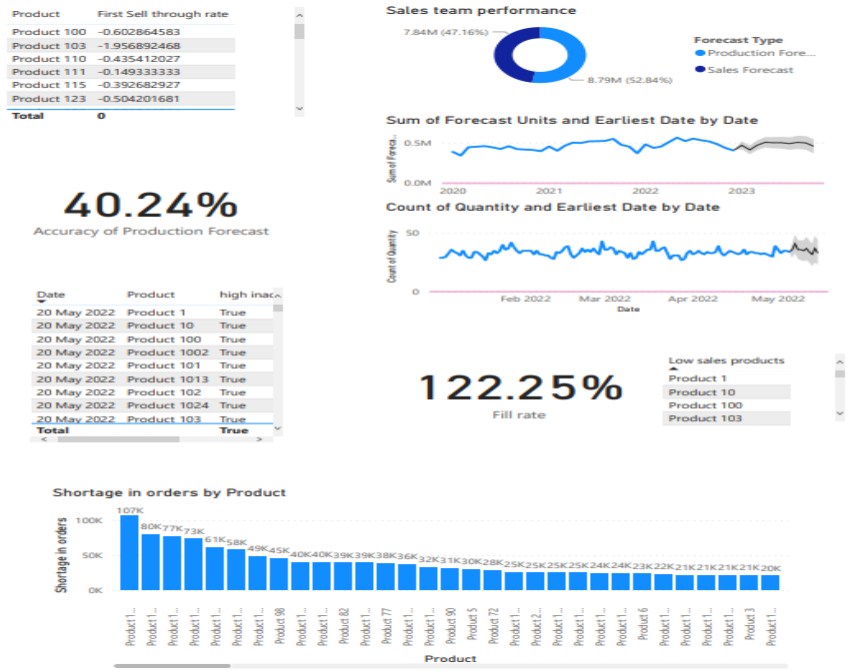


Figure 1: First task dashboard

Also, the supervisor gave us an exercise individually again that require using Power Bi but, in this exercise, we were focused to make the report more efficient and useful for end-users and make a custom design for the report. The task is data about Covid 19. Moreover, we should analyze the data and try to find the most important information to present in the dashboard. Also, the supervisor focuses on the design and how to make a customized design to use it frequently. Here is the result of the second task:

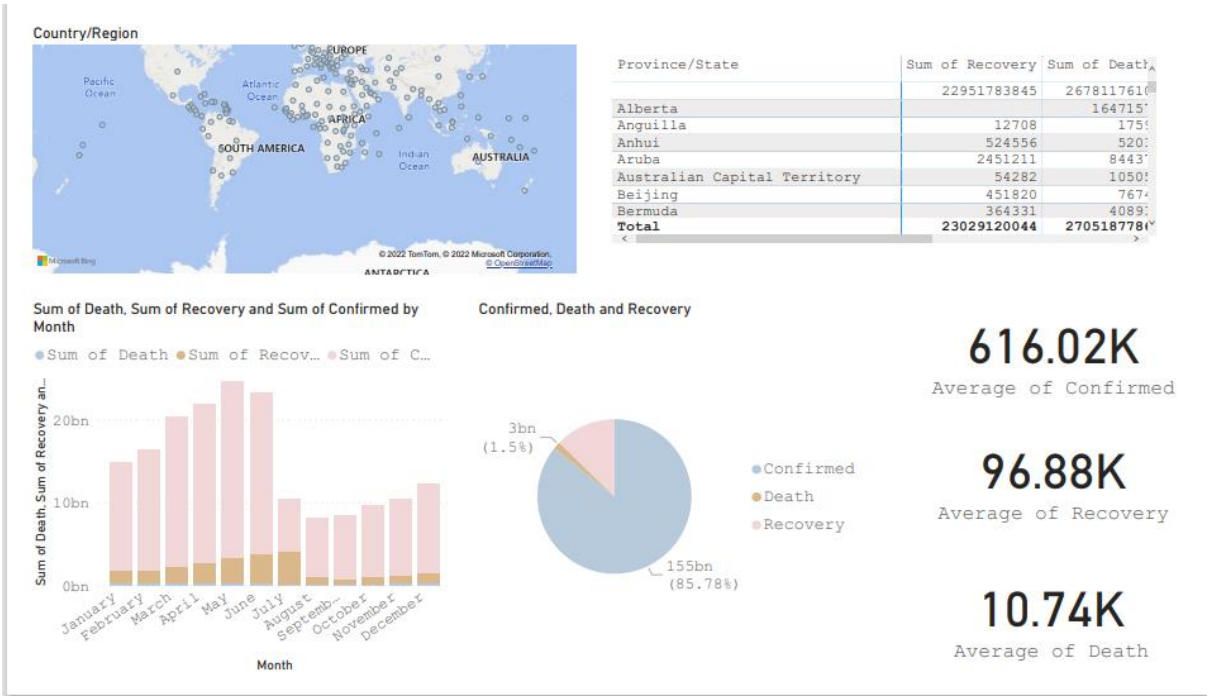


Figure 2: Second task dashboard

Moreover, the third task was also invidiously, and it was about a sales scenario without knowing any requirements. The requirement paper was including this description below:

"**THE BRIEF** You are an analyst working at a major retailer. The sales director has approached you and asked for you to prepare a report that he can take to the executives regarding sales performance and make sure it looks good. Unfortunately, he is unavailable for any further conversations about what he wants in the report! " .

In addition, Mr. Rene educated us about how to control the view of the dashboard in Power BI using the DAX functions. Also, how to make the dashboard in size of a phone screen, tablet screen and how to publish it. The picture below shows my work:

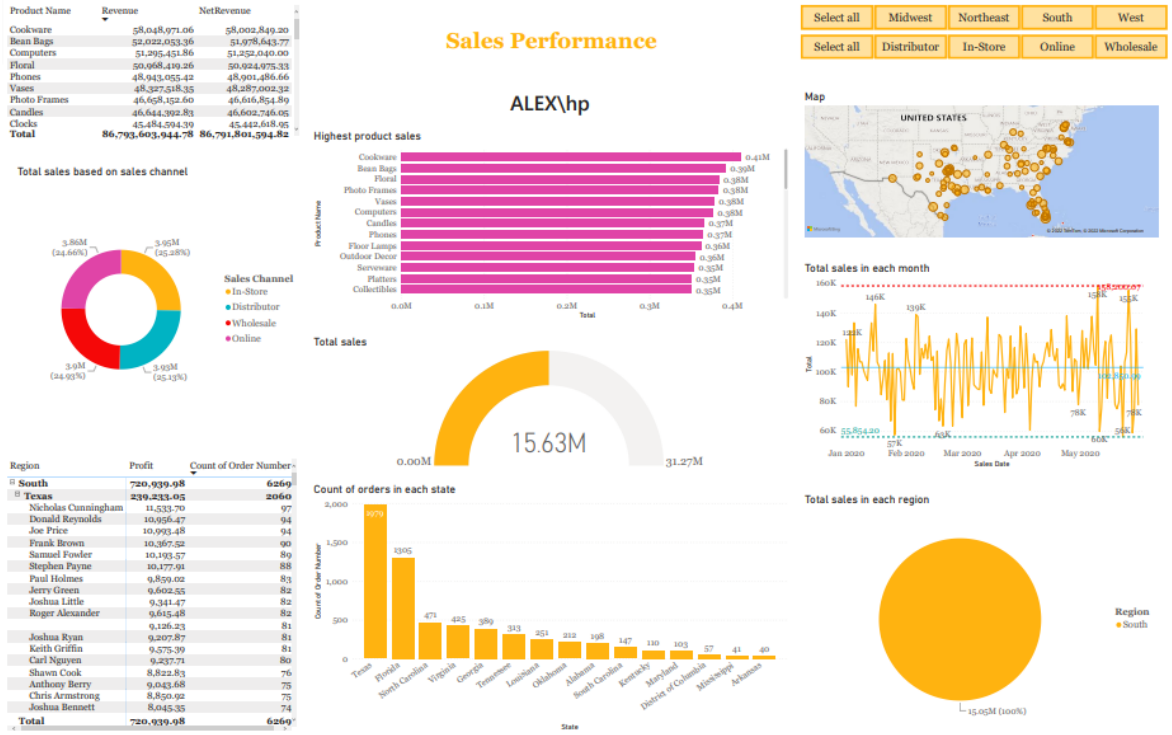


Figure 3: Third task dashboard

Summary of the fifth to last weeks:

First, Mr. Rene gave us a task to work as a team. Moreover, the project is about a database and making a data warehouse using ETL" extract transform load" to transform the data from the database to the data warehouse and after that, we will generate a report from the data warehouse.

Also, I am the one who is responsible for creating the data warehouse and ETL using Microsoft visual studio and Microsoft SQL server management services, and then we will work together on the final report. You can see example pictures of the ETL Process and data warehouse below:

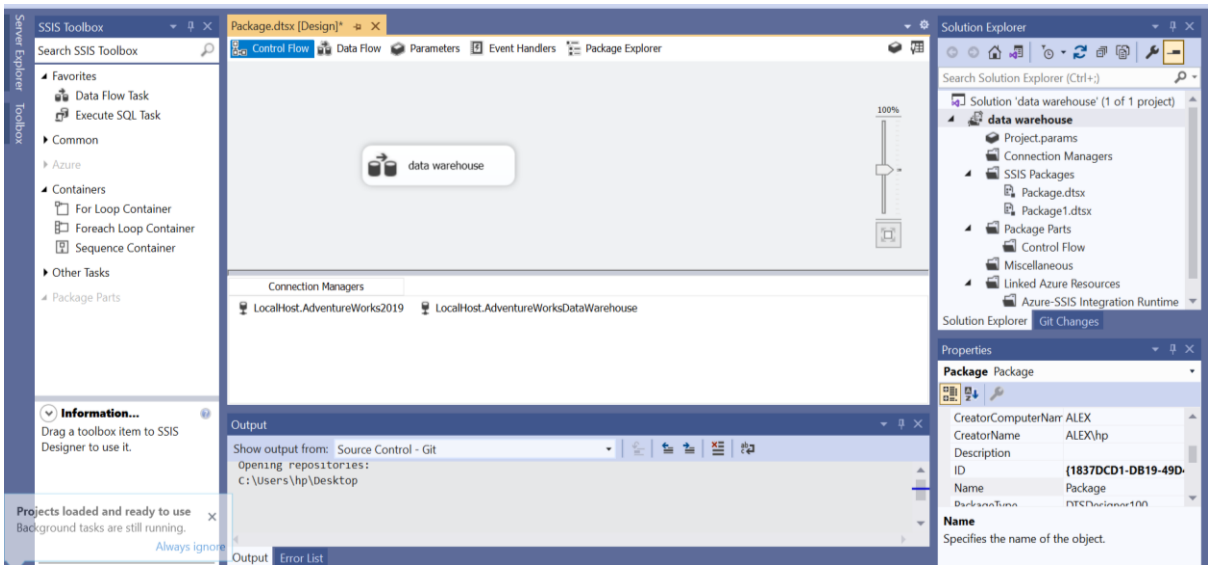


Figure 4 : ETL Process: creating workflow

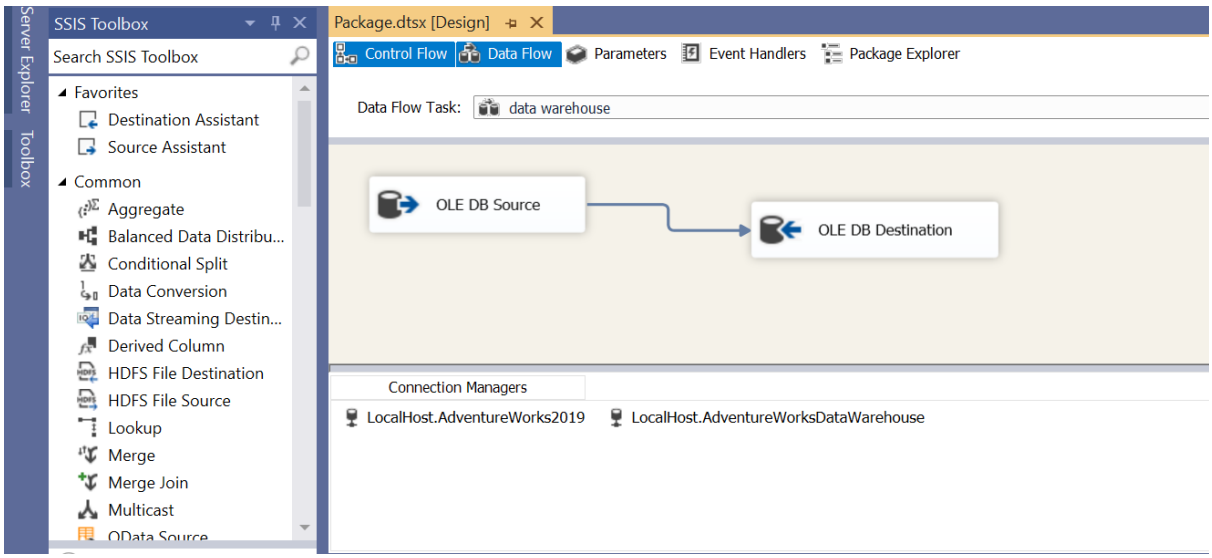


Figure 5: ETL Process: creating dataflow

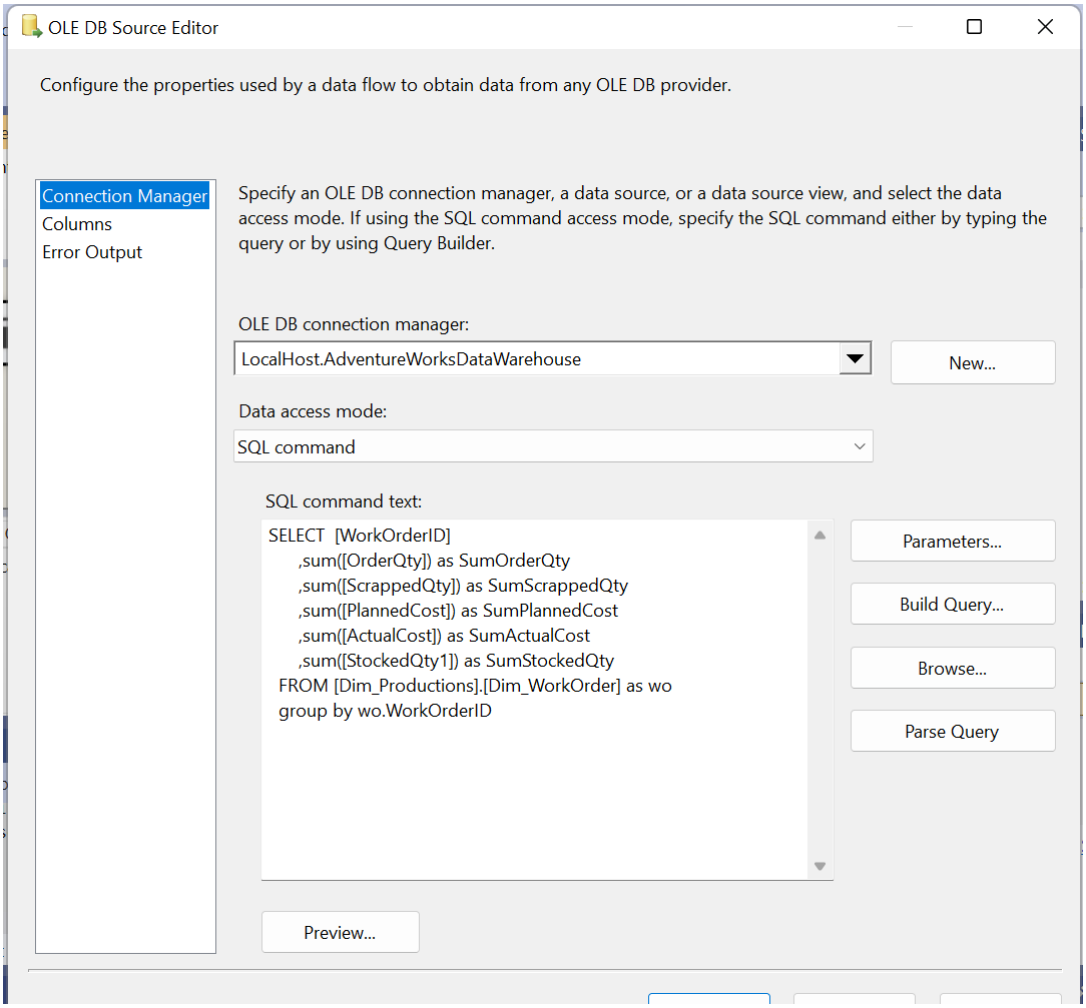


Figure 6 : ETL Process: Source table with SQL Command

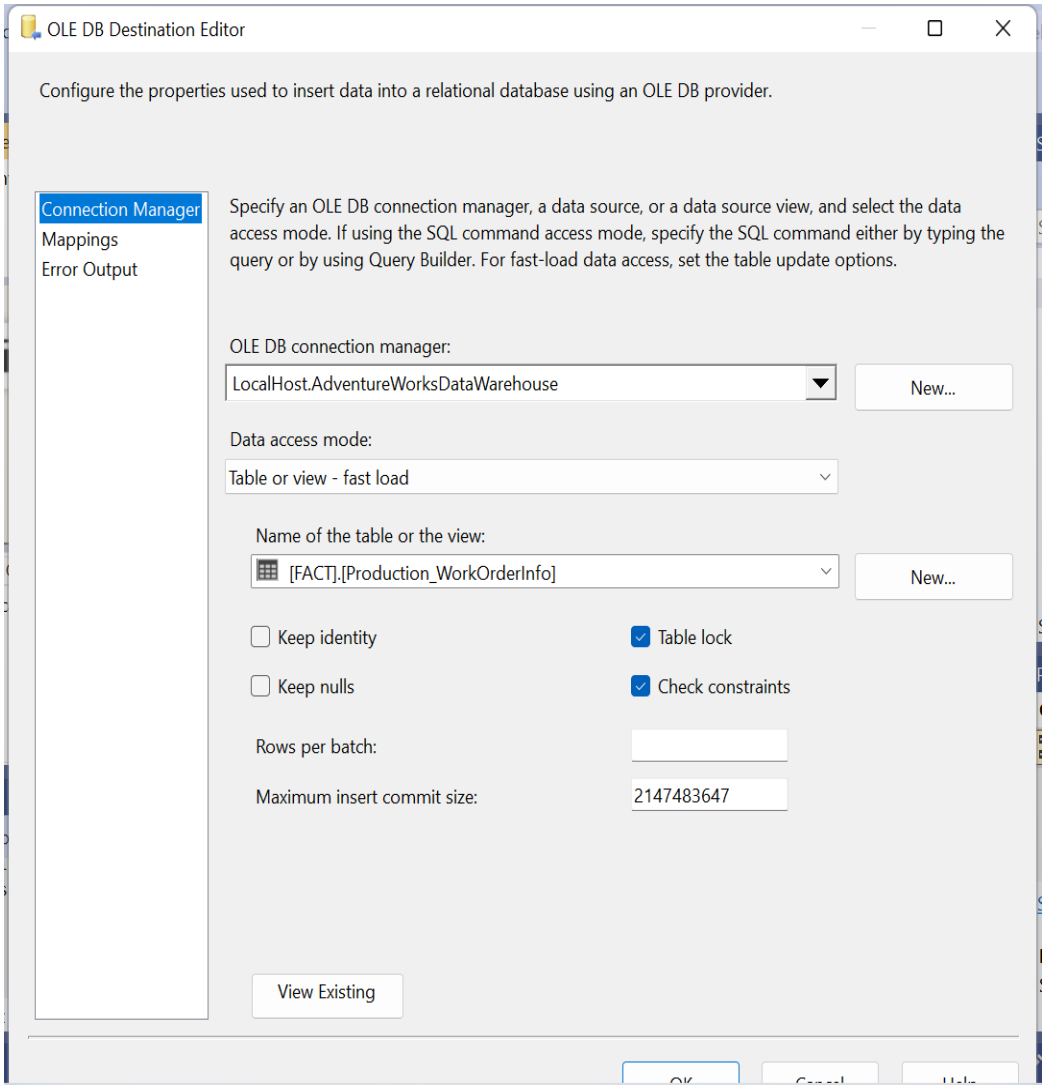


Figure 7: ETL Process: Destination table

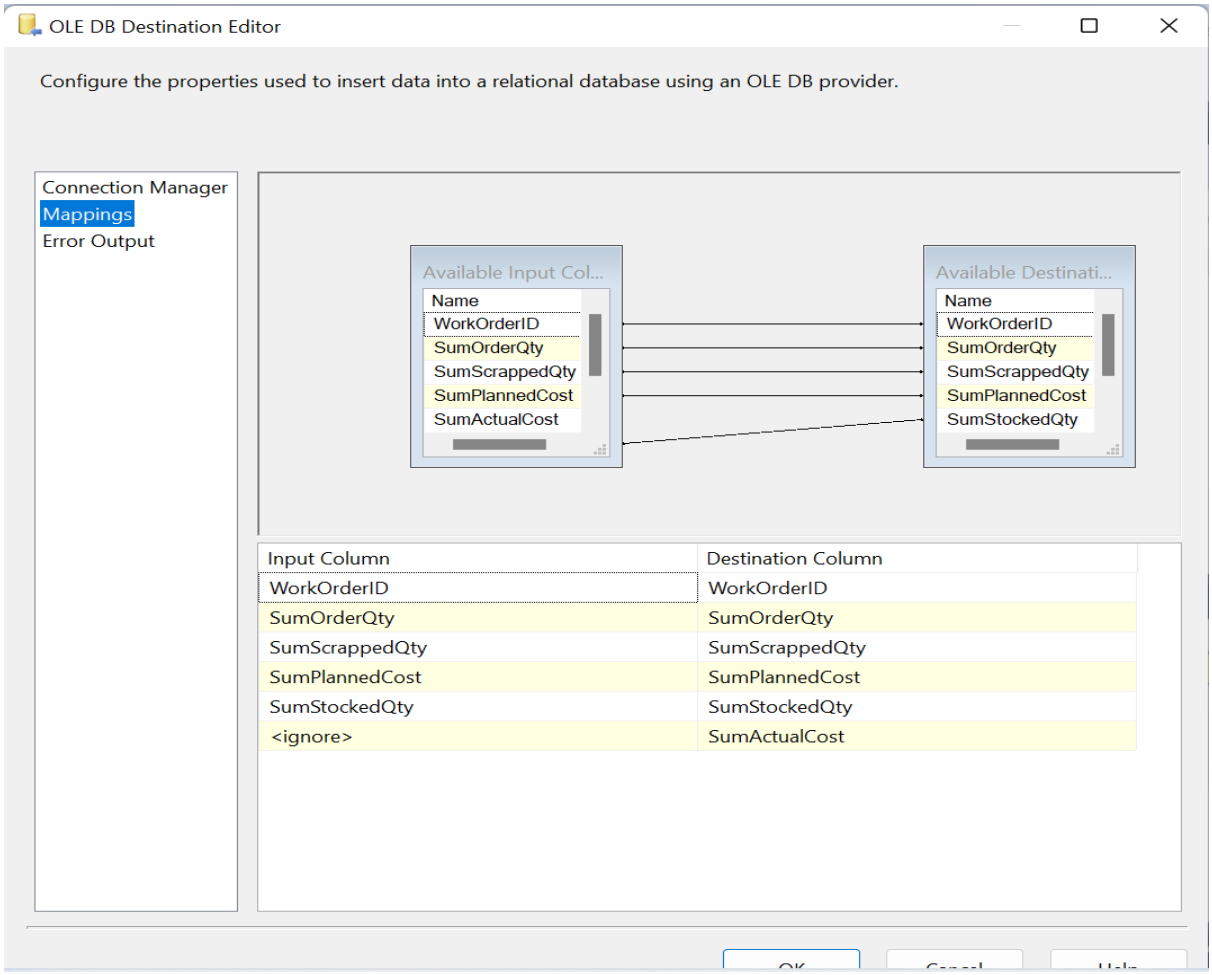


Figure 8 : ETL Process: Mapping the source and destination columns

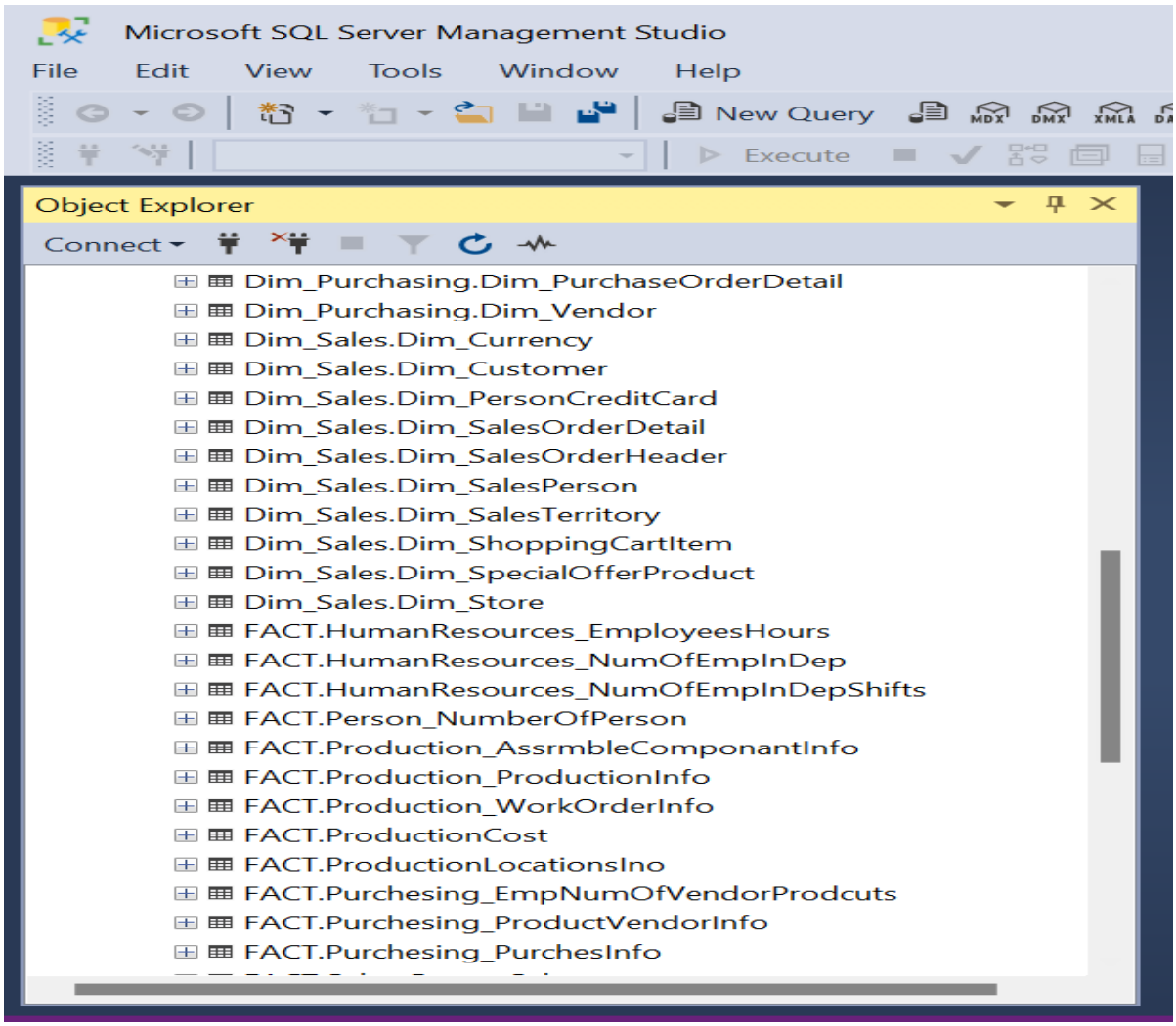


Figure 9: Created data warehouse

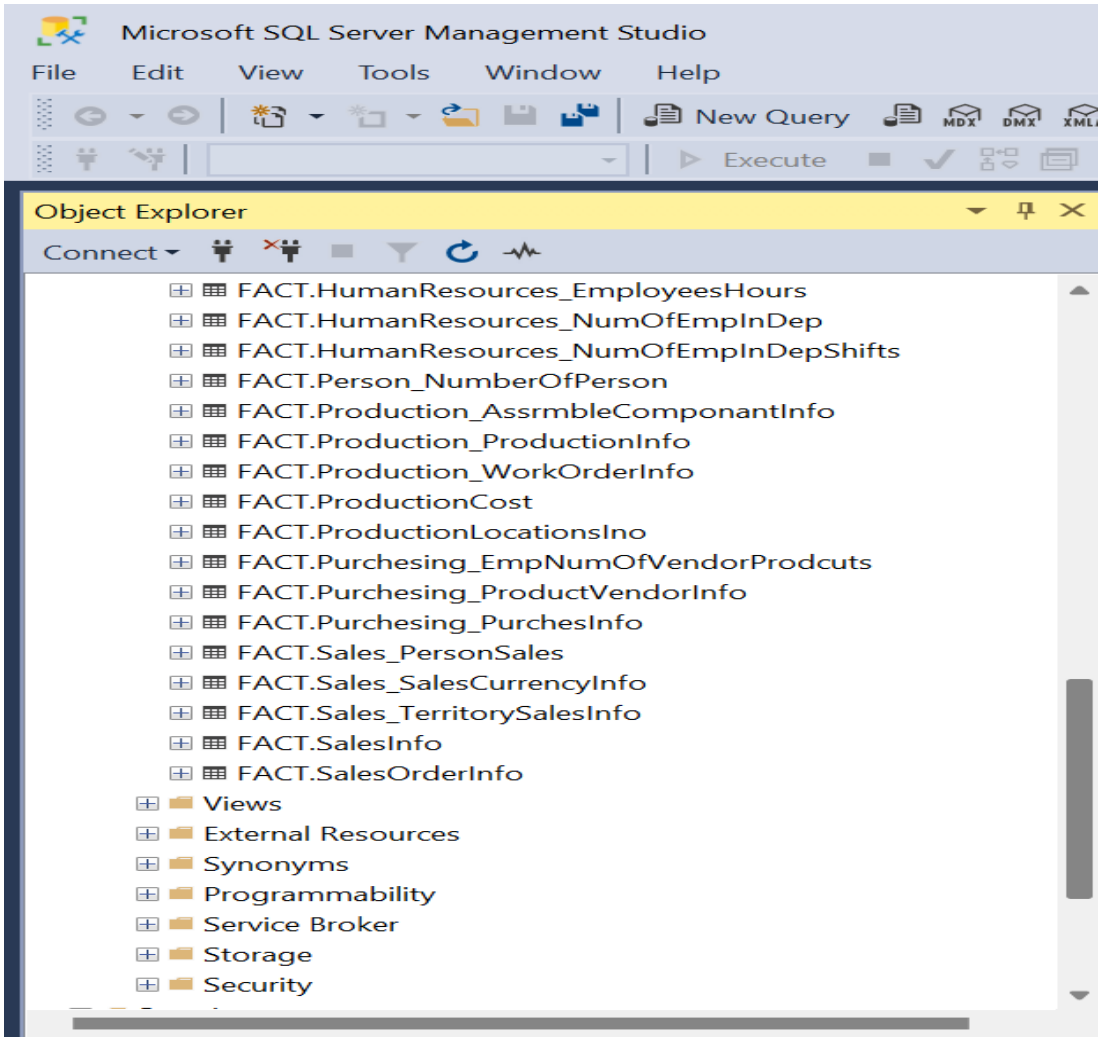
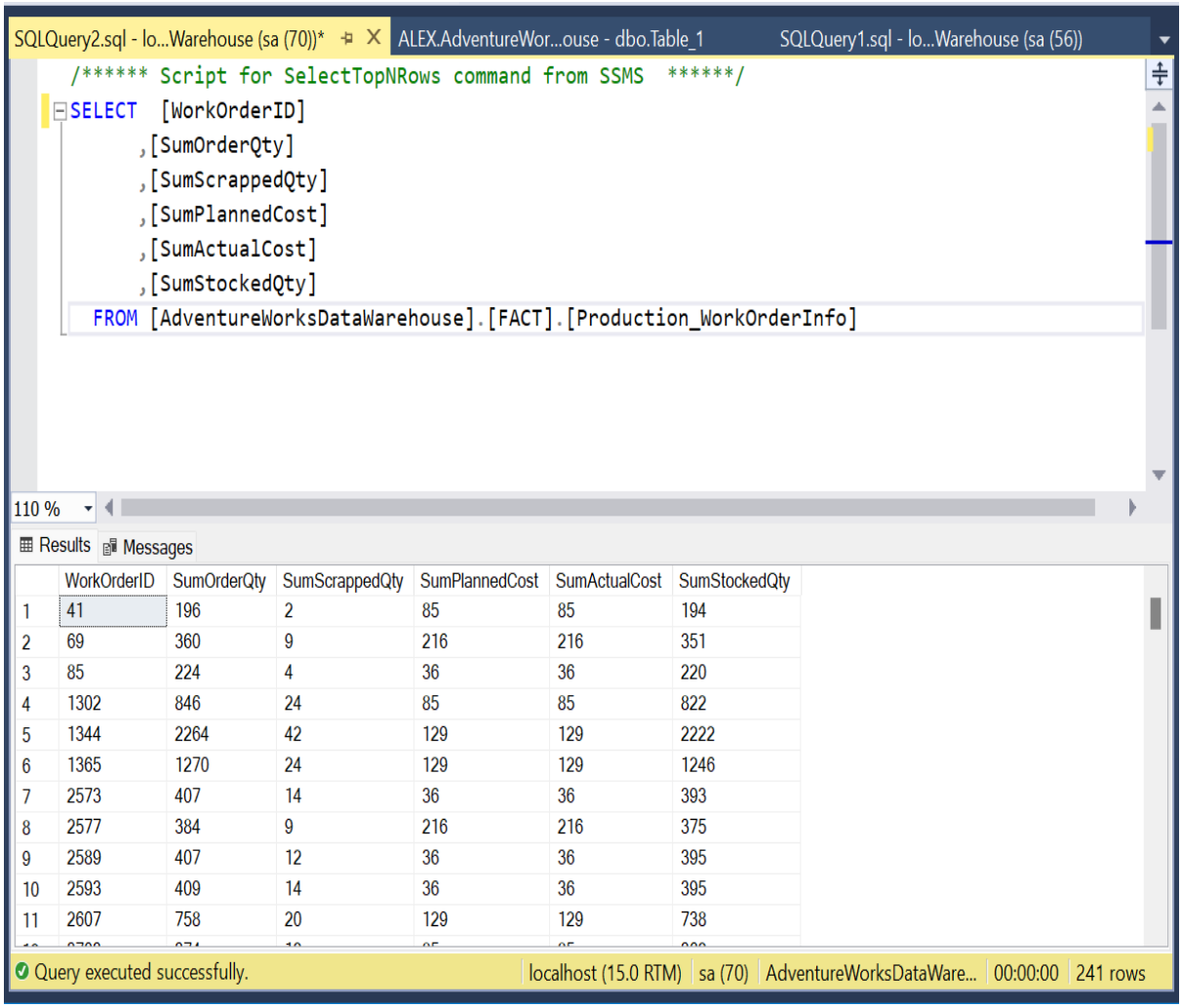
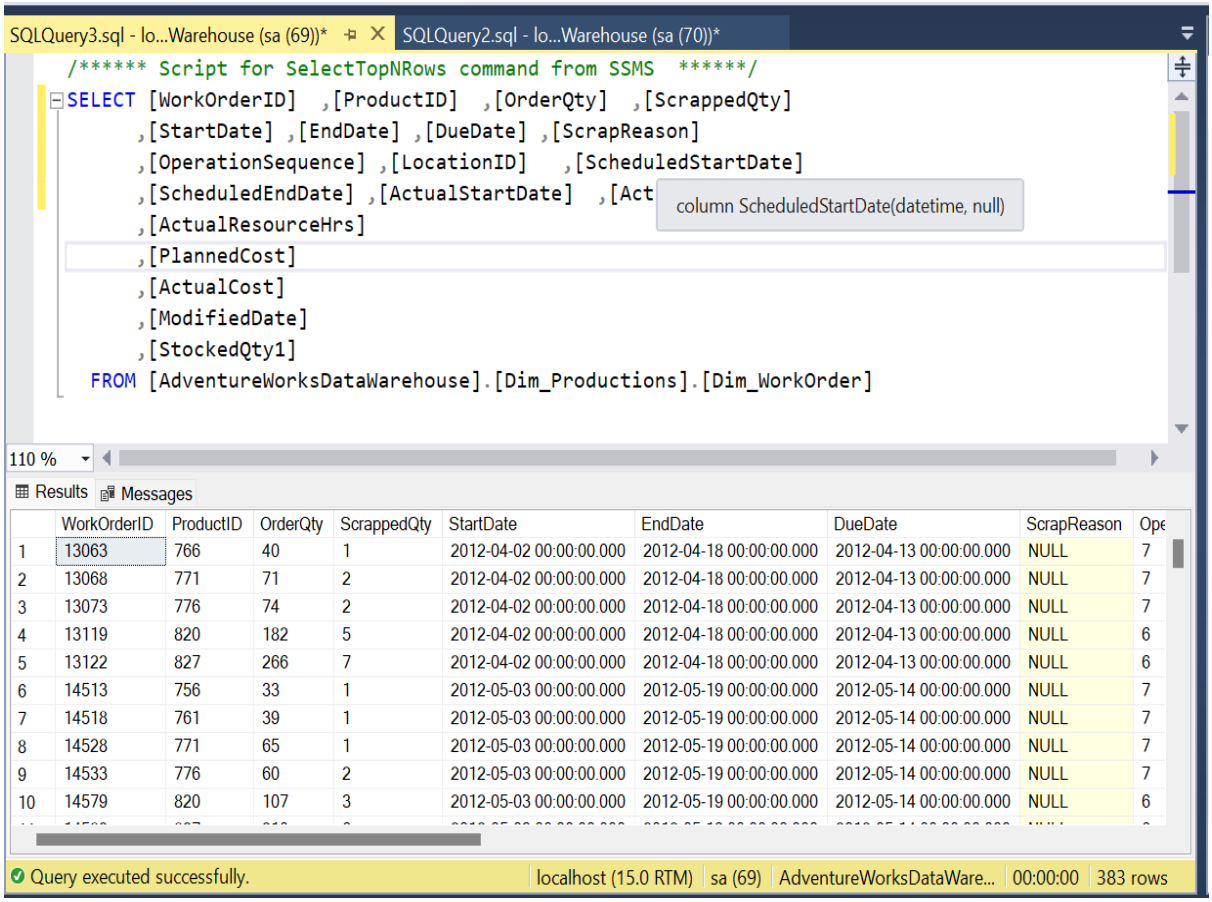


Figure 10: Created data warehouse 2



	WorkOrderID	SumOrderQty	SumScrappedQty	SumPlannedCost	SumActualCost	SumStockedQty
1	41	196	2	85	85	194
2	69	360	9	216	216	351
3	85	224	4	36	36	220
4	1302	846	24	85	85	822
5	1344	2264	42	129	129	2222
6	1365	1270	24	129	129	1246
7	2573	407	14	36	36	393
8	2577	384	9	216	216	375
9	2589	407	12	36	36	395
10	2593	409	14	36	36	395
11	2607	758	20	129	129	738

Figure 11: Example of a fact table that we made



: Example of a dimension table that we made12 Figure

Unfortunately, we couldn't finish the power bi of this project in time because the database was huge and hard to work with for the first time. However, it was a good experience to work at the data warehouse for the first time.

Second, the supervisor Ziad told us that Mr. Sameer who is the managing director and board member wanted me and Marwa Jan, and Hanen Aljadani to work with Petromin managers but in the end, it came out that he wants one girl only to work with Mr. Ali Alzahrani the government relationships manager to fill up an Excel file that contains Fuel station information for Petromin and I volunteer.

In fact, he gave me huge construction license documents for all Petromin fuel stations that need to fill in the Excel file that he gave me and report for unfilled fuel stations that have no construction license.

The achievement in summer training

- Learning how to analyze the data
- Learning DAX in Power Bi
- Learning How to make an interactive report
- Improved in the data analysis field
- Took an experience of how Data analyst employees work in reality
- Learning more about how to create and manage a data warehouse
- Used ETL and how it is efficient to deal with multiple sources of data
- How to be a data engineer
- Learning more about how to create and manage a data warehouse and how it will help me in my journey as a data scientist and data analyst

The obstacles in summer training

Analysing the data to create business knowledge information because I am new to business KPIs, and I do not have much experience in the business world.

- A new software to learn efficiently and correctly
- Lack of experience in how to deal with data and business KPIs “Key Performance Indicators”
- The progress with me and my team were slow because the database is huge and a little bit difficult to understand.
- The process of transferring the data from the database to the data warehouse was slow because we have 20-30 tables approximately and it depends on creating select queries that match the requirement of the data warehouse tables
- The progress to create a data warehouse is slow cause it needs to analyze how to create dimensions tables and fact tables

Conclusion

In conclusion, we can use multiple data sources to create a single database for analysis and it's called a data warehouse. In fact, using ETL to move the data from multiple sources into a data warehouse is very efficient. Moreover, a Data warehouse is helpful in making reports for decision-making and reports using analytics tools such as Power BI. In this summer training, I had to learn more about Data analytics and warehousing, ETL, using Microsoft visual studio and Microsoft SQL server management services, and making interactive reports using Power BI software. In fact, for Power BI, I worked on three tasks that the coach gave me, and one big project that must use ETL, and data warehousing to create a single and unified place for the data analysis and make business knowledge, and decision-making.

References

[1]: Getting started with Power BI by Stacia Misner Varga on Pluralsight Jul 08, 2021

[2]: Building your first SSIS 2016 Packages by Thomas LeBlanc on Pluralsight Jun 26,2020

[3]: Power BI tutorial from beginner to pro desktop to a dashboard in 60 minutes May by Avi Singh on YouTube May 1, 2019

[4]: Create an ETL package with SSIS! step-by-step by Kahan Data Solution on YouTube Jun 26, 2019

[5]: Data Analytics: Hands-on by Ben Sullins on Pluralsight Jul 16, 2015

[6]: How to use Power BI DAX – tutorial by Kavin Stratvert on YouTube May 17, 2021

[7]: Beginning Power BI DAX Functions Tutorial [Full Course] by Pragmatic Works Oct 8, 2020

[8]: Common DAX" Data Analysis Expression and scenarios" in Power Bi playbook on Pluralsight Jul 08, 2021

[9]: The fastest way to become a data analyst and get a job by Stefanovic on YouTube Jul 11, 2022

[10]: How I would learn to be a data analyst Luke Barousse on YouTube Jan 05, 2022