

Title: Data Warehouse simulation

Aim: To run Data Warehouse simulation

Resources needed: Different RDBMS such as MySQL, Postgres

Theory

Data Warehouse :

A data warehouse is a type of data management system that is designed to enable and support business intelligence (BI) activities, especially analytics. Data warehouses are solely intended to perform queries and analysis and often contain large amounts of historical data. The data within a data warehouse is usually derived from a wide range of sources such as application log files and transaction applications.

A data warehouse centralizes and consolidates large amounts of data from multiple sources. Its analytical capabilities allow organizations to derive valuable business insights from their data to improve decision-making. Over time, it builds a historical record that can be invaluable to data scientists and business analysts. Because of these capabilities, a data warehouse can be considered an organization's "single source of truth."

ETL :

Extract, Transform, Load (ETL) refers to a process in database usage and especially in data warehousing. Data extraction is where data is extracted from homogeneous or heterogeneous data sources; data transformation where the data is transformed for storing in the proper format or structure for the purposes of querying and analysis; data loading where the data is loaded into the final target database, more specifically, an operational data store, data mart, or data warehouse.

By using an established ETL framework, one may increase one's chances of ending up with better connectivity and scalability. A good ETL tool must be able to communicate with the many different relational databases and read the various file formats used throughout an organization. ETL tools have started to migrate into Enterprise Application Integration, or even Enterprise Service Bus, systems that now cover much more than just the extraction, transformation, and loading of data. A common use case for ETL tools include converting CSV files to formats readable by relational databases. A typical translation of millions of records is facilitated by ETL tools that enable users to input csv-like data feeds/files and import it into a database with as little code as possible. ETL tools in most cases contain a GUI that helps users conveniently transform data, using a visual data mapper, as opposed to writing large programs to parse files and modify data types.

Activities:

For Data Warehouse:

1. Visit <https://www.oracle.com/webfolder/s/assets/demo/adw-quicktour-na/index.html#step1>
2. Go through the demo of Autonomous Data Warehouse for different businesses
3. Prepare a report with following points
 - a. The nature of analytics for different businesses given

- b. Comparison between traditional analysis and analysis with Data Warehouse
- c. For any two business type given, specify at least two different scenarios where the tool can be useful

Results:**1. Report for Data Warehouse**

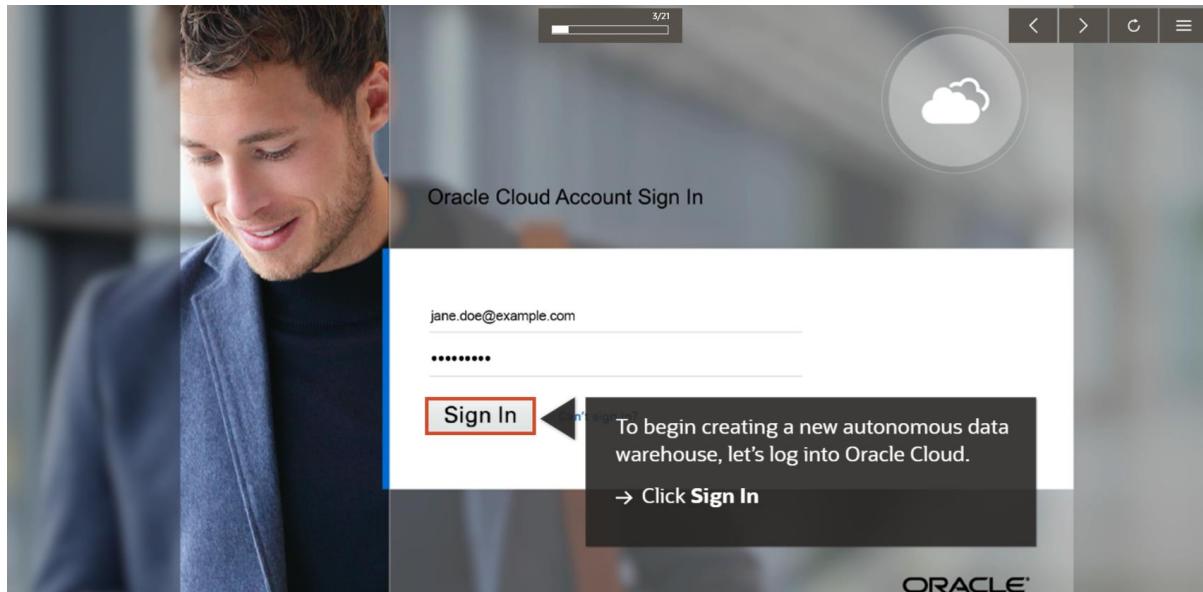
The image consists of two vertically stacked screenshots of a mobile application interface.

Screenshot 1 (Top): Welcome IT pro!

- A smartphone screen on the left shows a lock screen with the time 12:11, date Friday, 31 May, and a notification for 'Report reminder'.
- To the right is a slide-in menu with the title "Welcome IT pro!".
- The menu text states: "Here's the scenario: as an IT professional, your goal is to support your business colleagues and the objectives of the enterprise from all technical aspects. Let's explore a few examples of how Oracle can make your job easier."
- A button labeled "Start Quick Tour" with a right-pointing arrow is at the bottom of the menu.

Screenshot 2 (Bottom): Using Oracle Autonomous Data Warehouse and Oracle Analytics you will complete 3 objectives:

- A circular icon containing a lightbulb with the text "IT" below it is on the left.
- The main text reads: "Using Oracle Autonomous Data Warehouse and Oracle Analytics you will complete 3 objectives:"
- Three numbered steps are listed:
 - 1 Set up an Autonomous Data Warehouse
 - 2 Scale your warehouse up and down as needed
 - 3 Build visualizations for the sales manager
- A button labeled "Start Objective 1" with a right-pointing arrow is at the bottom.



ORACLE Cloud My Services

Dashboard

Cloud Services

0 Important Notifications

IaaS/PaaS (Cloud Account)
\$1,000 of \$1,000 USD
Remaining (2/2/2018 - 2/2/2023)

Data Integration Platform Cloud Autonomous DW

View Details Open Service Console View Account Usage Details

Next, open the service console.
→ Click Open Service Console

Autonomous Data Warehouses in ADW_General Compartment

Create Autonomous Data Warehouse

Name	State	Database Name	CPU Core Count	Storage (TB)	Created
There are no Autonomous Data Warehouses in ADW_General that match the filter criteria.					

No Autonomous Data Warehouses < Page 1 >

Then, begin setup of your warehouse with the click of a button.
→ Click Create Autonomous Data Warehouse button

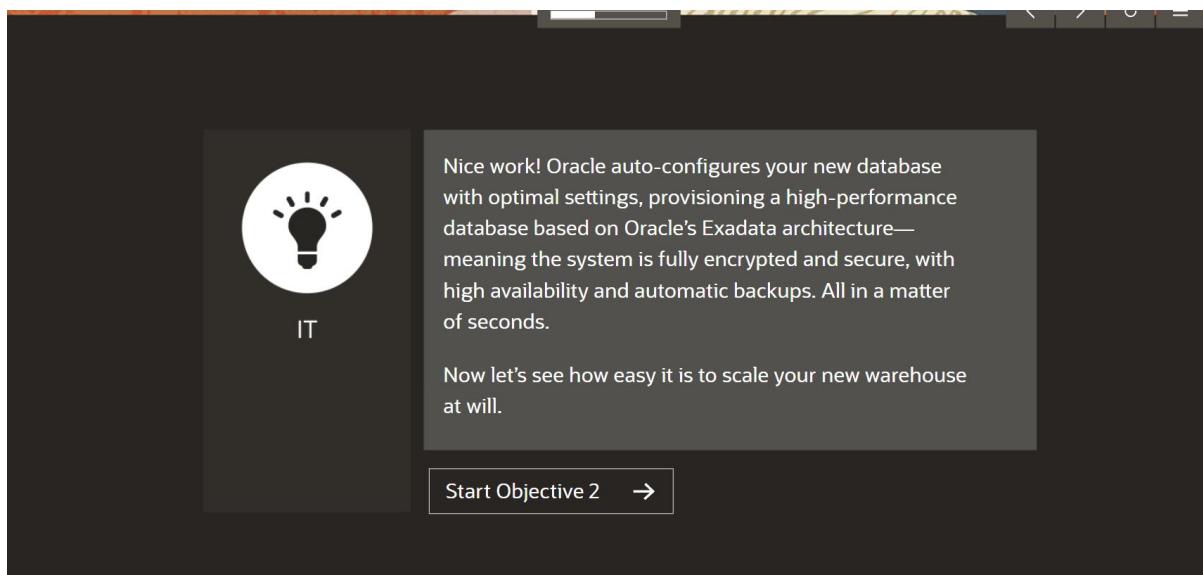
Name your database, choose the number of CPUs, edit storage amounts for the data warehouse, specify the admin password, and hit "Create." It's that easy—the autonomous system handles all the hard work behind the scenes.

→ Click **Create Autonomous Data Warehouse** button

Success—now let's take a quick look and double-check our settings.

→ Click **Finance Mart** row

Everything looks good—your Autonomous Data Warehouse is now up and running.



SSB_Analysis - Project

Profit by Product Brand & Regions

	UNITED STD	UNITED ST1	UNITED ST2	UNITED ST3	UNITED ST4	UNITED ST5	UNITED ST6	UNITED ST7	UNITED ST8	UNITED ST9
MFGR#141	3.929B	4.465B	4.293B	4.130B	4.464B	4.197B	4.129B	4.152B	4.024B	4.070B
MFGR#1410	4.040B	4.209B	3.908B	3.954B	4.070B	3.821B	3.962B	4.515B	4.104B	4.297B
MFGR#1411	3.655B	4.195B	4.074B	4.293B	4.001B	4.031B	4.210B	4.055B	4.134B	4.119B
MFGR#1412	4.138B	4.054B	4.134B	4.143B	4.107B	4.055B	4.137B	4.044B	4.055B	4.070B
MFGR#1413	3.789B	4.050B	4.198B	4.253B	4.313B	4.133B	4.120B	4.152B	4.024B	4.119B
MFGR#1414	4.500B	4.257B	4.047B	4.420B	4.133B	4.198B	4.120B	4.152B	4.024B	4.119B
MFGR#1415	3.547B	4.199B	4.002B	3.838B	3.864B	3.976B	3.881B	3.962B	4.055B	4.134B
MFGR#1416	3.800B	4.134B	3.784B	4.198B	4.120B	4.176B	4.198B	4.152B	4.024B	4.119B
MFGR#1417	4.191B	4.176B	3.940B	4.257B	3.883B	4.198B	4.120B	4.152B	4.024B	4.119B
MFGR#1418	3.698B	3.869B	4.166B	3.976B	3.864B	4.055B	4.134B	4.119B	4.070B	4.024B
MFGR#1419	4.411B	4.175B	4.269B	4.207B	4.102B	4.175B	4.191B	3.873B	4.062B	4.119B
MFGR#142	3.871B	3.896B	4.517B	4.104B	4.231B	4.104B	4.227B	4.270B	3.705B	4.133B
MFGR#1420	3.846B	4.110B	3.925B	3.830B	4.027B	4.107B	4.055B	4.181B	3.906B	4.119B
MFGR#1421	4.012B	4.016B	4.217B	3.982B	4.091B	4.023B	4.116B	4.172B	4.196B	4.119B
MFGR#1422	3.658B	4.047B	3.864B	4.158B	3.712B	4.110B	4.068B	3.949B	4.145B	4.119B
MFGR#1425	4.111B	4.337B	4.059B	4.177B	4.214B	3.999B	4.216B	4.133B	4.119B	4.119B

Query Time: 100 seconds
Current ADWC CPUs: 4

Running against 6 billion records, a typical business analyst report (Profit by Brand and Regions) could take 100 seconds with a 4 CPU data warehouse.

But what if that just isn't fast enough for your business? Let's simply and quickly adjust the number of CPUs via a custom call to a REST interface.

Scale ADWC CPUs to:

SSB_Analysis - Project

Profit by Product Brand & Regions

	UNITED STD	UNITED ST1	UNITED ST2	UNITED ST3	UNITED ST4	UNITED ST5	UNITED ST6	UNITED ST7	UNITED ST8	UNITED ST9
MFGR#141	3.929B	4.465B	4.293B	4.130B	4.464B	4.197B	4.129B	4.152B	4.024B	4.070B
MFGR#1410	4.040B	4.209B	3.908B	3.954B	4.070B	3.821B	3.962B	4.515B	4.104B	4.297B
MFGR#1411	3.655B	4.195B	4.074B	4.293B	4.001B	4.031B	4.210B	4.055B	4.134B	4.119B
MFGR#1412	4.138B	4.054B	4.134B	4.143B	4.107B	4.055B	4.137B	4.044B	4.055B	4.070B
MFGR#1413	3.789B	4.050B	4.198B	4.253B	4.313B	4.121B	3.821B	4.068B	3.949B	4.145B
MFGR#1414	4.500B	4.257B	4.047B	4.420B	4.133B	4.176B	4.198B	4.152B	4.024B	4.119B
MFGR#1415	3.547B	4.199B	4.002B	3.838B	3.864B	3.751B	4.154B	3.965B	3.915B	3.962B
MFGR#1416	3.800B	4.134B	3.784B	4.198B	4.132B	3.964B	3.964B	4.022B	4.181B	3.906B
MFGR#1417	4.191B	4.176B	3.940B	4.257B	3.883B	4.276B	4.116B	4.270B	3.705B	4.133B
MFGR#1418	3.698B	3.869B	4.166B	3.976B	3.881B	4.027B	3.913B	3.964B	4.068B	4.119B
MFGR#1419	4.411B	4.175B	4.269B	4.207B	4.102B	4.154B	4.116B	4.172B	4.196B	4.119B
MFGR#142	3.871B	3.896B	4.517B	4.104B	4.231B	3.968B	4.068B	4.133B	4.119B	4.119B
MFGR#1420	3.846B	4.110B	3.925B	3.830B	4.027B	4.107B	3.878B	3.964B	4.068B	4.119B
MFGR#1421	4.012B	4.016B	4.217B	3.982B	4.091B	3.905B	4.227B	4.116B	4.133B	4.119B
MFGR#1422	3.658B	4.047B	3.864B	4.158B	3.712B	3.729B	4.110B	3.964B	4.133B	4.119B
MFGR#1425	4.111B	4.337B	4.059B	4.177B	4.214B	3.999B	4.216B	4.133B	4.119B	4.119B

Query Time: 100 seconds
Current ADWC CPUs: 4

Drag the CPU scaler up to 16 for instant, additional computing power.
→ Drag Slider to 16

Scale ADWC CPUs to:

SSB_Analysis - Project

Data Elements: SB_LINEORDER, SB_SUPPLIER, SB_DATE, SB_CUSREV_BINS, SB_Q4_3, My Calculations, SB_CUSTOMER, My Calculations, Value Labels.

Click here or drag data to add a filter.

Profit by Product Brand & Regions

	UNITED STD	UNITED ST1	UNITED ST2	UNITED ST3	UNITED ST4	UNITED ST5	UNITED ST6	UNITED ST7	UNITED ST8	UNITED ST9
MFGR#141	3.925B	4.469B	4.293B	4.130B	4.464B	4.187B	4.129B	4.152B	4.024B	4.070B
MFGR#1410	4.048B	4.209B	3.906B	3.954B	4.070B	3.821B	3.962B	4.515B	4.104B	4.297B
MFGR#1411	3.865B	4.195B	4.074B	4.293B	4.001B	4.031B	4.210B	4.056B	4.134B	4.119B
MFGR#1412	4.139B	4.054B	4.134B	4.143B	4.107B	4.023B	4.157B	4.191B	4.134B	4.119B
MFGR#1413	3.789B	4.050B	4.198B	4.253B	4.047B	4.420B	4.275B	4.066B	4.000B	4.180B
MFGR#1414	4.500B	4.257B	4.047B	4.206B	4.954B	4.070B	3.821B	4.130B	4.104B	4.297B
MFGR#1415	3.947B	4.199B	4.002B	3.838B	4.191B	4.176B	3.946B	4.257B	4.119B	4.062B
MFGR#1416	3.800B	4.134B	3.784B	4.168B	4.018B	4.031B	4.210B	4.055B	4.134B	4.119B
MFGR#1417	4.191B	4.176B	3.946B	4.257B	4.107B	4.023B	4.157B	4.191B	4.134B	4.119B
MFGR#1418	3.969B	3.869B	4.196B	3.976B	4.111B	4.313B	4.121B	4.068B	3.949B	4.146B
MFGR#1419	4.411B	4.175B	4.269B	4.207B	4.047B	4.420B	4.133B	4.262B	4.565B	4.000B
MFGR#142	3.875B	3.896B	4.517B	4.104B	4.231B	3.968B	4.066B	4.275B	3.936B	4.222B
MFGR#1420	3.846B	4.110B	3.925B	3.830B	4.027B	4.187B	3.878B	3.773B	3.926B	3.986B
MFGR#1421	4.012B	4.016B	4.219B	3.982B	4.091B	3.905B	4.227B	4.178B	4.453B	4.124B
MFGR#1422	3.858B	4.047B	3.864B	4.158B	3.712B	3.729B	4.110B	4.000B	3.968B	3.686B
MFGR#1425	4.111B	4.337B	4.059B	4.177B	4.214B	3.999B	4.216B	4.292B	4.339B	4.264B

Now refresh the report to get the updated performance stats.

→ Click Refresh Data

Query Time: 100 seconds

Current ADWC CPUs: 16

Scale ADWC CPUs to:

0 4 16 32 48 64 96 128

Project Properties
Canvas Properties
Data Actions
 Synchronize Visualizations

Refresh Data

Refresh Data Sets
Reset Colors
Clear Canvas
Create New Project
Revert to Saved
Debug

SSB_Analysis - Project

Data Elements: SB_LINEORDER, SB_SUPPLIER, SB_DATE, SB_CUSREV_BINS, SB_Q4_3, My Calculations, SB_CUSTOMER, My Calculations, Value Labels.

Click here or drag data to add a filter.

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MFGR#1416	3.909B	4.191B	3.909B	4.175B	4.070B	3.821B	4.130B	3.907B	4.156B	4.297B
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MFGR#1419	3.868B	4.111B	4.337B	4.059B	4.177B	3.999B	4.216B	4.292B	4.339B	4.264B

Process time dropped from 100 to just 13 seconds—now that's more like it.

→ Next

Query Time: 13 seconds

Current ADWC CPUs: 16

Scale ADWC CPUs to:

0 4 16 32 48 64 96 128

Project Properties
Canvas Properties
Data Actions
 Synchronize Visualizations

Refresh Data

Refresh Data Sets
Reset Colors
Clear Canvas
Create New Project
Revert to Saved
Debug

SSB_Analysis - Project

Data Elements: SB_LINEORDER, SB_SUPPLIER, SB_DATE, SB_CUSREV_BINS, SB_Q4_3, My Calculations, SB_CUSTOMER, My Calculations, Value Labels.

Click here or drag data to add a filter.

Profit by Product Brand & Regions

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MFGR#1414	4.500B	4.257B	4.047B	4.420B	4.133B	4.262B	4.565B	4.000B	4.172B	4.196B
MFGR#1415	3.947B	4.199B	4.002B	3.838B	3.864B	3.751B	4.154B	3.868B	3.915B	3.962B
MFGR#1416	3.800B	4.134B	3.784B	4.198B	4.132B	3.964B	4.022B	4.181B	3.936B	4.146B
MFGR#1417	4.191B	4.054B	4.134B	4.143B	4.107B	4.023B	4.157B	4.191B	4.134B	4.119B
MFGR#1418	3.868B	4.111B	4.337B	4.059B	4.177B	3.999B	4.216B	4.292B	4.339B	4.264B

Now you're only paying for what you use, and only when you need.

→ Next

Query Time: 13 seconds

Current ADWC CPUs: 0

Scale ADWC CPUs to:

0 4 16 32 48 64 96 128

Project Properties
Canvas Properties
Data Actions
 Synchronize Visualizations

SELECT

```

/* STARMB q4_3.sql */
/*+ no_result_cache */
d_year, s_city, p_brand1,
SUM(lo_revenue-lo_supplycost) AS profit
FROM dwdate, customer, supplier,
part, lineorder
WHERE lo_custkey = c_custkey
AND lo_suppkey = s_suppkey
AND lo_partkey = p_partkey
AND lo_orderdate = d_datekey
AND c_region = 'AMERICA'
AND s_nation = 'UNITED STATES'
AND (d_year = 1997
OR d_year = 1998)
AND p_category = 'MFGR#14'
GROUP BY d_year, s_city, p_brand1
ORDER BY d_year, s_city, p_brand1;

```

Objective 2 Complete



IT

Nice work! Just as you're exploring easy scaling, a request for data visualizations comes in from the sales manager. Let's explore how quick and easy it is to build effective visualizations to gather key insights.

[Start Objective 3 →](#)

ORACLE Data Visualization

Home

What are you interested in?

With Oracle Ask you can type:

The sales manager needs key information about sales by product, profit, and customer segment. From the Data Visualization home screen, quickly type the queries you're interested in to see visual results.

→ Type in "sales"

Tip: Create a new Data Set by simply dropping your file anywhere on this page

Download Samples

Connect to Your Data

Explore Your Data

Visualize data "Revenue by Product"

Find sources of data "Financial Data"

POS File

Color by Attribute example Project

4 Project

Sample Project Project

Home

What are you interested in?

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Find sources of data "Financial Data"

POS File

Color by Attribute example Project

4 Project

Sample Project Project

ORACLE Data Visualization

Home

Search results containing **sales**

Visualize data using **Sales**

Sales
Sample Orders R Examples

Sales
Campaign

Sales
Sample Order Lines

Mobile Viz Project POS p1 p2 392,894 Color by Attribute example Project 4 Project Sample Project Project

The smart search panel automatically suggests query results.
Tip: Open your file and → Click **Sales**

Download Samples Connect to Your Data Explore Your Data

ORACLE Data Visualization

Home

Sales

Visualization

Sales

8,500,000.00

Visual results are instantly displayed. Let's add a product filter to keep building our picture of all the information the sales manager needs.

Next →

ORACLE Data Visualization

Home

Sales

A Product Name
Sample Order Lines

A Product Container
Sample Order Lines

A Product Category
Sample Order Lines

A Product Sub Category
Sample Order Lines

Sales

8,500,000.00

Let's add "Product Sub Category" to the mix.
→ Click **Product Sub Category**

Home Create

Sales Product Sub Category

Visualization

Sales by Product Sub Category

Notice how the visualization starts to build based on all search parameters we choose, painting a clearer picture. Let's keep going.

Next →

ORACLE Data Visualization 17/21

Home Create

Sales Product Sub Category profit

Profit Sample Order Lines

Visualization

Sales by Product Sub Category

Home Create

Sales Product Sub Category Profit

Visualization

Sales, Profit by Product Sub Category

Now we're getting some really good stuff. One last query—let's add customer data.

Next →

ORACLE Data Visualization 19/21 Home Create

Sales # of Customers Sample Order Lines

Customer Segment Sample Order Lines

Customer Name Sample Order Lines

CustomerID Sample Order Lines

Sales Select "Customer Segment" add it to the mix.

8,500,000.00 → Select Customer Segment

Sales

ORACLE Data Visualization 20/21 Home Create

Sales Product Sub Category Profit Customer Segment

Visualization

Sales, Profit by Product Sub Category, Customer Segment

Sales, Profit by Product Sub Category, Customer Segment

Sales, Profit by Product Sub Category, Customer Segment

Sales by Product Sub Category

Sales by Product Sub Category, Customer Segm...

Looks great!

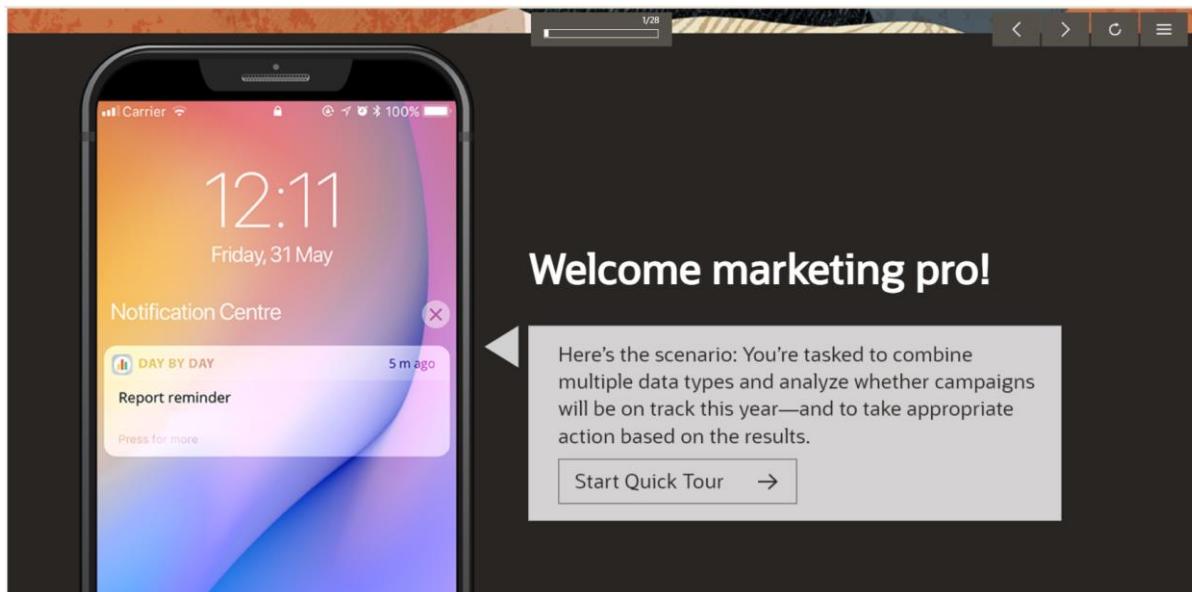
Now you have a complete view to send over to the sales manager—which can even be sent to any mobile device, perfect for a business traveling scenario.

Finish! →

Mission accomplished!



Thanks to the ease of use and power of Oracle Autonomous Data Warehouse you've successfully embraced the power of autonomous with Oracle.



Using Oracle Autonomous Data Warehouse and Oracle Analytics you will complete 4 objectives:

- 1** Load your Autonomous Database and prepare data for analysis
- 2** Analyze overall campaign performance
- 3** Identify and create a campaign on most likely wins
- 4** Use Oracle Day by Day to check campaign results

You are now *autonomous*. Let's go!

Start Objective 1 →

ORACLE Analytics

Home

Get Started with Oracle Analytics

Visualize Data

Explore your data and uncover important insights using interactive and intuitive visualizations

Watch Overview

Prepare Data

Get your data ready for analysis using visual data flows that transform, enrich and blend different sources

To gain all the insights we need, combining multiple data sources in one place for fast and easy analysis is key. Let's start by loading all appropriate data spreadsheets that might help in our analysis.

→ Click Create button

What are you interested in?

CX Campaign Re...	LiftChart Calc Input	CX Camp LOB Sc...	Bank Marketing Campaign Data	CX_Response	CX Camp Channel Scores
			Decision Tree Regression		New Patient New Node Predicted Target Val...

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ORACLE Analytics Home

Get Started with Oracle Analytics

→ Click Data Flow

Watch Overview

Visualize Data

Explore your data and uncover important insights using interactive and intuitive visualizations.

Prepare Data

Get your data ready for analysis using visual data flows that transform, enrich and blend different sources.

Learn More

Visit our Academy and video library to learn how you can do more with Oracle Analytics.

Create

Data Flow

Sequence Connection

Data Replication Replication Connection

What are you interested in?

ORACLE Analytics Untitled

Add Data Set

CX_Response

First, let's load customer experience data
→ Select CX Response spreadsheet

Add

Data Flow Steps

- Add Data
- Join
- Union Rows
- Filter
- Aggregate
- Save Data Set
- Create Essbase Cube
- Add Columns
- Select Columns
- Rename Columns
- Transform Column
- Merge Columns
- Bin
- Group

ORACLE Analytics Untitled

Click the + symbol to add customer and finance data to the mix.

Add Data - CX_Response

Data Set: CX_Response

Description: Uploaded from CX_Response.xlsx.

When Run: Prompt to select Data Set

Columns: All (11) Selections (11)

Name

CustomerID

Channel

TimeOfDay

DayOfWeek

CampaignId

CustomerID

Channel

TimeOfDay

DayOfWeek

CampaignId

ab_CustomerID	ab_Channel	ab_TimeOfDay	99_DayOfWeek	99_Campaign_Id	ab_Product_LOB	ab_Conversion_Flag	ab_Source	Time_
ID00000003	Call	Afternoon	5	4	Tv	1	Inbound call	09/19/20
ID00000012	Call	Morning	7	4	Tv	1	SMS	10/08/20

ORACLE Analytics

Untitled

Data Flow Steps

- Add Data
- Join
- Union Rows
- Filter
- Aggregate
- Save Data Set
- Create Essbase Cube
- Add Columns
- Select Columns
- Rename Columns
- Transform Column
- Merge Columns
- Bin
- Group

Add Data - CX_Response

Add Data

→ Click Add Data

When Run

- Train Numeric Prediction
- Train Multi-Classifer
- Train Binary Classifier
- Train Clustering
- Apply Model

Day_of_Week

Campaign_Id

CustomerID Channel TimeOfDay DayOf_Week Campaign_Id Product_LOB Conversion_Flag Source TimeStamp

ID00000003	Call	Afternoon	5	4	Tv	1	Inbound call	09/19/2014
ID00000012	Call	Morning	7	4	Tv	1	SMS	10/08/2014

Run Data Flow Save

ORACLE Analytics

Untitled

Data Flow Steps

- Add Data
- Join
- Union Rows
- Filter
- Aggregate
- Save Data Set
- Create Essbase Cube
- Add Columns
- Select Columns
- Rename Columns
- Transform Column
- Merge Columns
- Bin
- Group

Add Data Set

Add Data - CX_Response

CX_Customer **CX_Finance**

→ Select CX_Customer and CX_Finance spreadsheets

CustomerID Channel TimeOfDay DayOf_Week Campaign_Id Product_LOB Conversion_Flag Source TimeStamp

ID00000003	Call	Afternoon	5	4	Tv	1	Inbound call	09/19/2014
ID00000012	Call	Morning	7	4	Tv	1	SMS	10/08/2014

Run Data Flow Save

ORACLE Analytics

Untitled

Data Flow Steps

- Add Data
- Join
- Union Rows
- Filter
- Aggregate
- Save Data Set
- Create Essbase Cube
- Add Columns
- Select Columns
- Rename Columns
- Transform Column
- Merge Columns
- Bin
- Group

Join

Click the + symbol to save this new combined data set.

Join

Keep rows

- Input 1 Matching rows
- Input 2 Matching rows

Match columns

Input 1	Operator	Input 2
Product_LOB	=	LOB

CustomerID Channel TimeOfDay DayOf_Week Campaign_Id Product_LOB Conversion_Flag Source TimeStamp

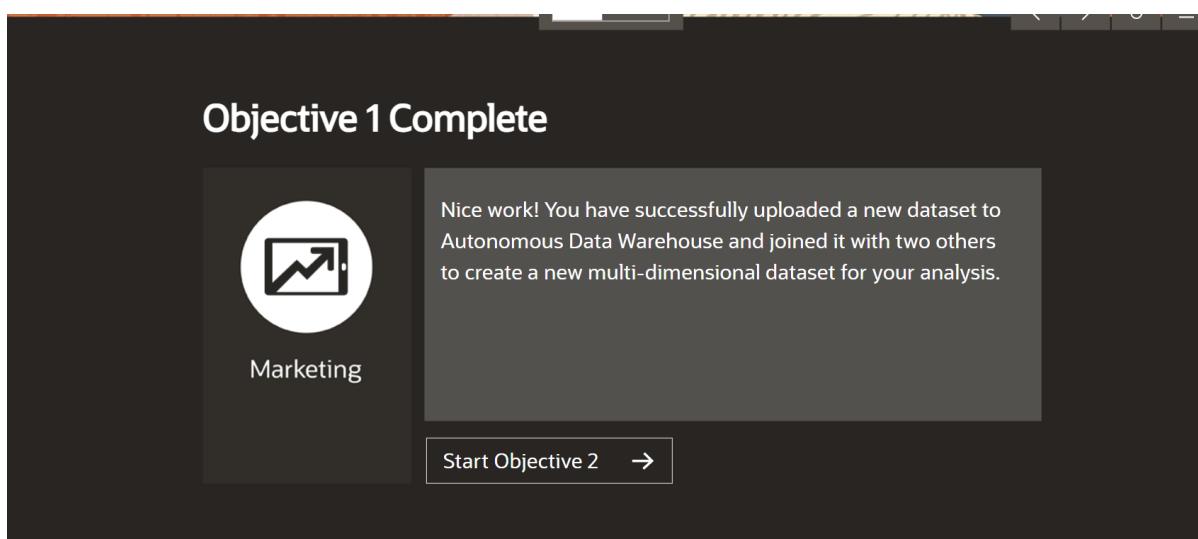
ID00000044	SMS	Afternoon	5	2	Computer	0	Inbound call	04/18/2014
ID00000044	Call	Afternoon	5	2	Computer	0	Inbound call	04/18/2014

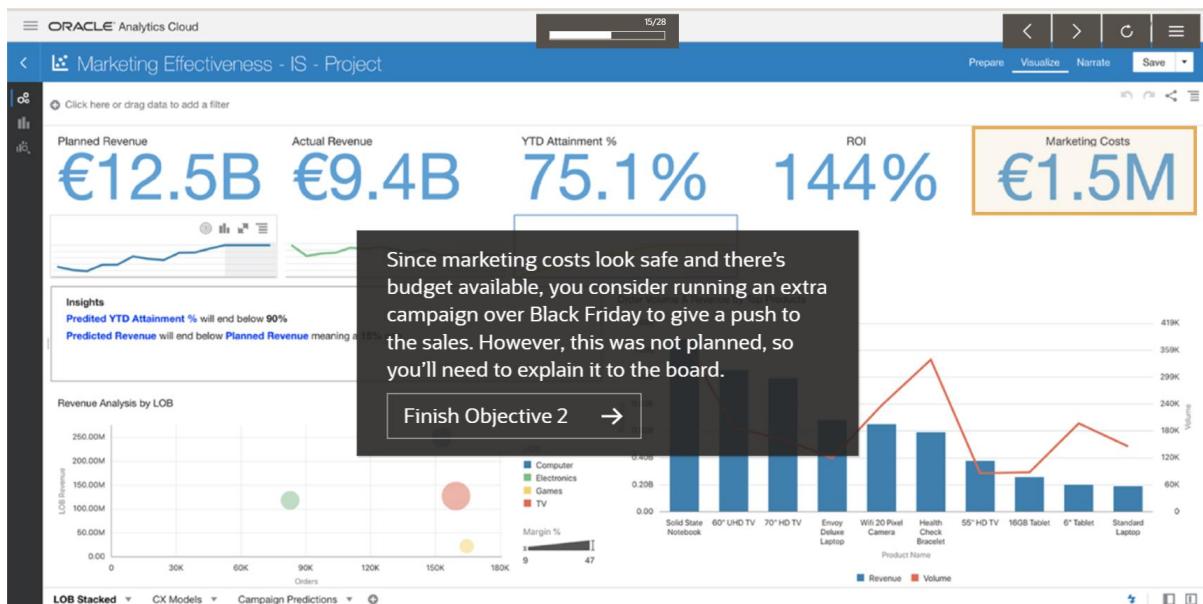
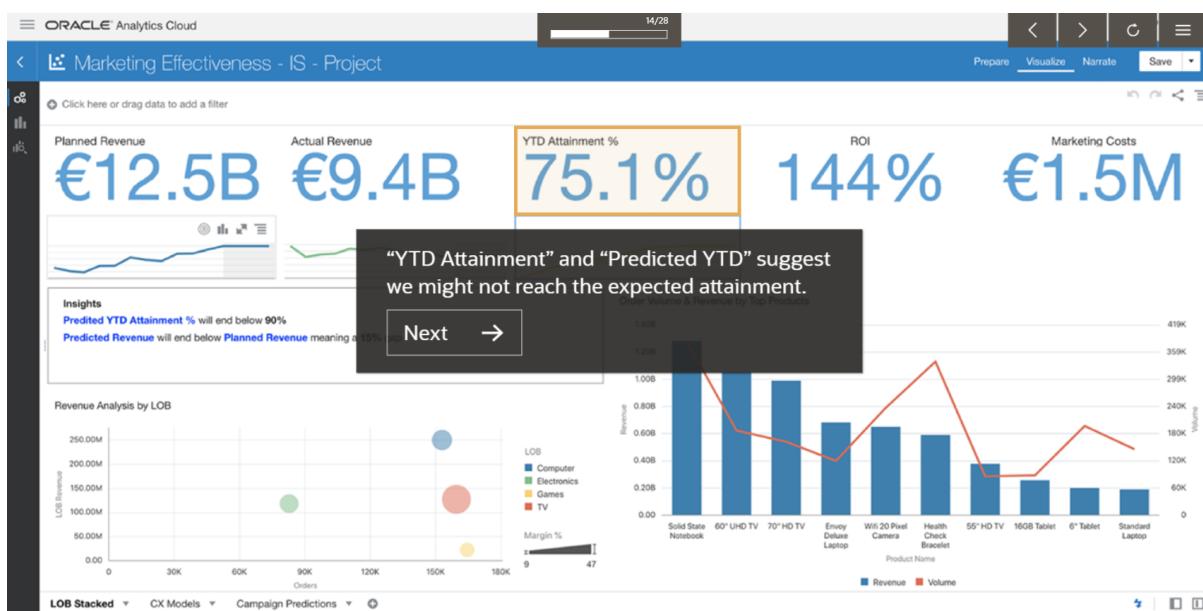
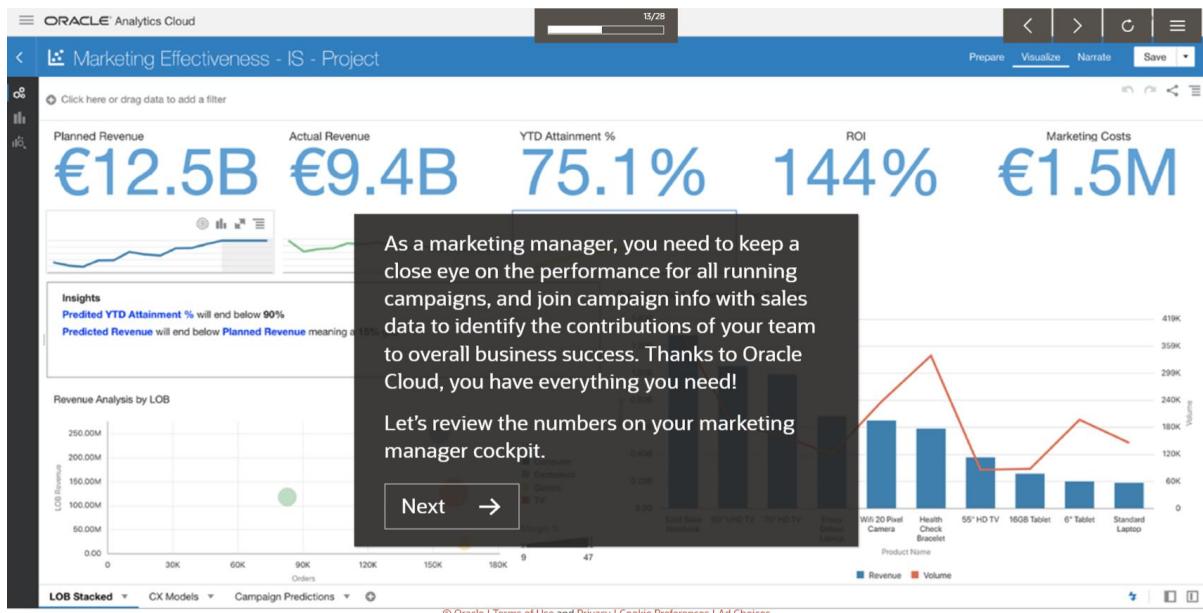
Run Data Flow Save

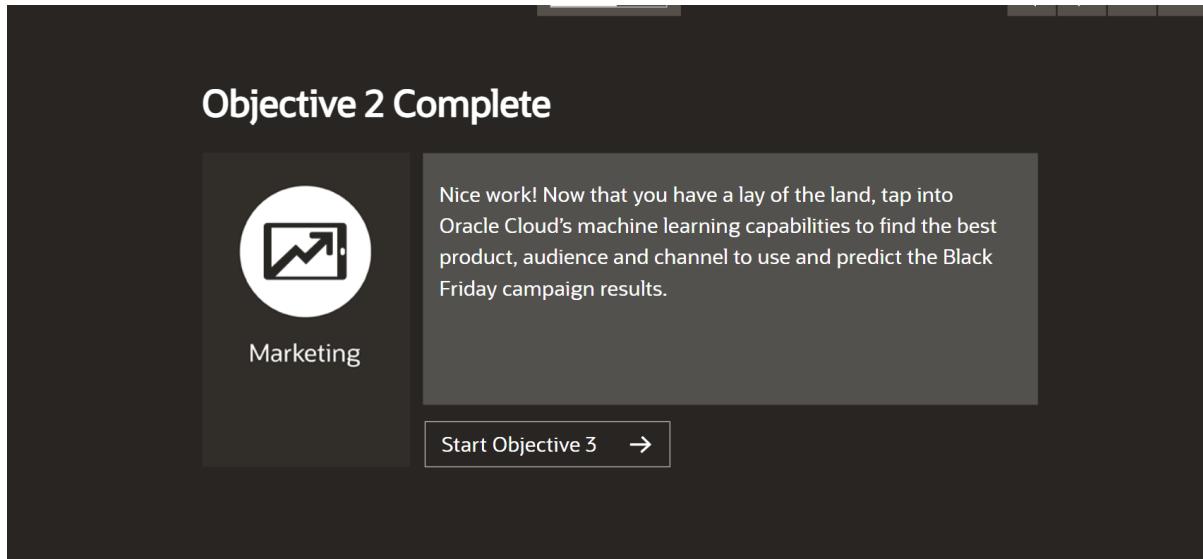
The screenshot shows the Oracle Analytics Data Flow Steps interface. On the left, a sidebar lists various steps: Add Data, Join, Union Rows, Filter, Aggregate, Save Data Set, Create Essbase Cube, Add Columns, Select Columns, Rename Columns, Transform Column, Merge Columns, Bin, and Group. The main area displays a data flow diagram with three input sources: CX_Respo..., CX_Custo..., and CX_Financ... merging into a single 'Join' step. Below the diagram, the 'Join' step is detailed with 'Keep rows' settings for 'Input 1' and 'Input 2' both set to 'Matching rows'. Under 'Match columns', 'Input 1' is mapped to 'Product_LOB' and 'Input 2' to 'LOB' using an '=' operator. To the right of the diagram is a toolbar with icons for Add Data, Join, Union Rows, Filter, Aggregate, Save Data (which is highlighted with a red box), and Create Essbase Cube. A large callout box points to the 'Save Data' icon with the text '→ Click Save Data'.

The screenshot shows the Oracle Analytics Data Flow Steps interface. On the left, a sidebar lists various steps: Add Data, Join, Union Rows, Filter, Aggregate, Save Data Set, Create Essbase Cube, Add Columns, Select Columns, Rename Columns, Transform Column, Merge Columns, Bin, and Group. The main workspace displays a data flow diagram with three data sources (CX_Response, CX_Customers, CX_Financial) merging into a single 'Save Data' step. A success message box is overlaid on the right: 'The new combined data set has now been saved' with a 'Next →' button. Below the diagram, a 'Save Data Set' dialog is open, showing the name 'CAMPAIN_ANALYSIS' and a preview of the data with a green checkmark and the message 'Data Flow "CAMPAIN_ANALYSIS" complete.' The data preview table includes columns: CustomerID, Channel, TimeOfDay, DayOf_Week, Campaign_Id, Product_LOB, Conversion_Flag, Source, and Time_Stamp.

CustomerID	Channel	TimeOfDay	DayOf_Week	Campaign_Id	Product_LOB	Conversion_Flag	Source	Time_Stamp
ID000000044	SMS	Afternoon	5	2	Computer	0	Inbound call	04/18/2014
11111111111111111111	SMS	Afternoon	6	3	Computer	0	Inbound call	04/18/2014







The image displays two screenshots of the Oracle Machine Learning interface. The top screenshot shows a "MARKETING ANALYSIS" notebook titled "Predicting Best Campaign by Likelihood of Selling". It contains a snippet of SQL code to review historical data from a table named "HIST_DATA", followed by a table with columns: TRANS_ID, AMOUNT, BILLADDRESSORIG, ISFLAGGEDFRAUD, ISFRAUD, NAMEDEST, NAMEORIG, NEWBALANCEDEST, and a timestamp column. The bottom screenshot shows another "MARKETING ANALYSIS" notebook titled "Build the Decision Tree Model". It contains a long PL/SQL script for building a decision tree model, including sections for dropping the model, creating it, and applying the result. A callout box points to the bottom of the script with the text "→ Scroll down to see machine learning in action".

ORACLE Machine Learning 17/28 Juan Antonio Project Connected

MARKETING ANALYSIS

data_table_name => 'FD_TRAIN_DATA',
case_id_column_name => 'TRANS_ID',
target_column_name => 'ISFRAUD';

Took 8 sec. Last updated by JAMP at July 29 2019, 7:50:27 PM. (updated)

View Model's Cumulative Gains Chart

```
sql*1
SELECT QUANTILE_NUMBER, GAIN_CUMULATIVE, PERCENTAGE_RECORDS_CUMULATIVE GAIN_BASELINE FROM FD_LIFT_TABLE;
```

Next →

Took 0 sec. Last updated by JAMP at July 29 2019, 7:52:22 PM. (updated)

Testing different models and algorithms, results look good!

→ Next, let's see how joining this model with marketing information can become a great base upon which we can perform in-depth analysis in Oracle Analytics Cloud.

ORACLE Analytics Cloud 18/28 Marketing Effectiveness - IS - Project Prepare Visualize Narrate Save

Click here or drag data to add a filter

Campaign Response Prediction

Gains Chart for Campaign Response Model

Lift Chart for Campaign Response Model

Model Facts

- Positive Response Prediction for **Campaign Response Model** is 34.33%
- Max Gain for **Campaign Response Model** is at 42% of population where we reach up to 77.63% of positive responses

Next →

Over in Oracle Analytics Cloud, a quick glance at the model facts that have been pulled over from the machine learning model summarizes the proposed Black Friday campaign's potential success.

ORACLE Analytics Cloud 19/28 Marketing Effectiveness - IS - Project Prepare Visualize Narrate Save

Click here or drag data to add a filter

Campaign Response Prediction

Gains Chart for Campaign Response Model

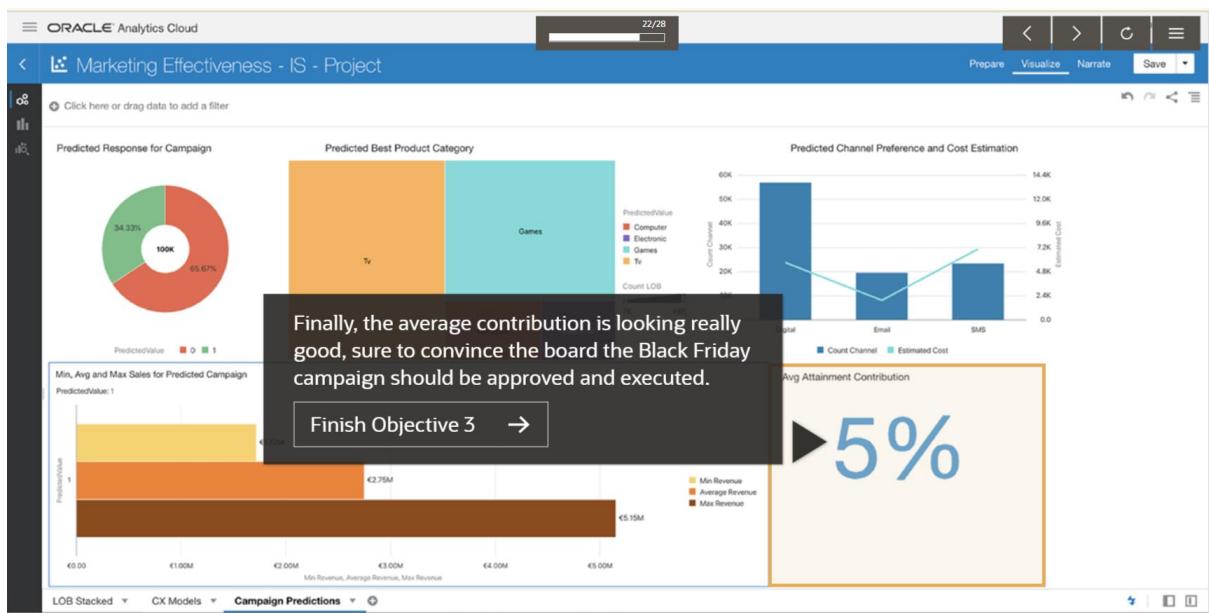
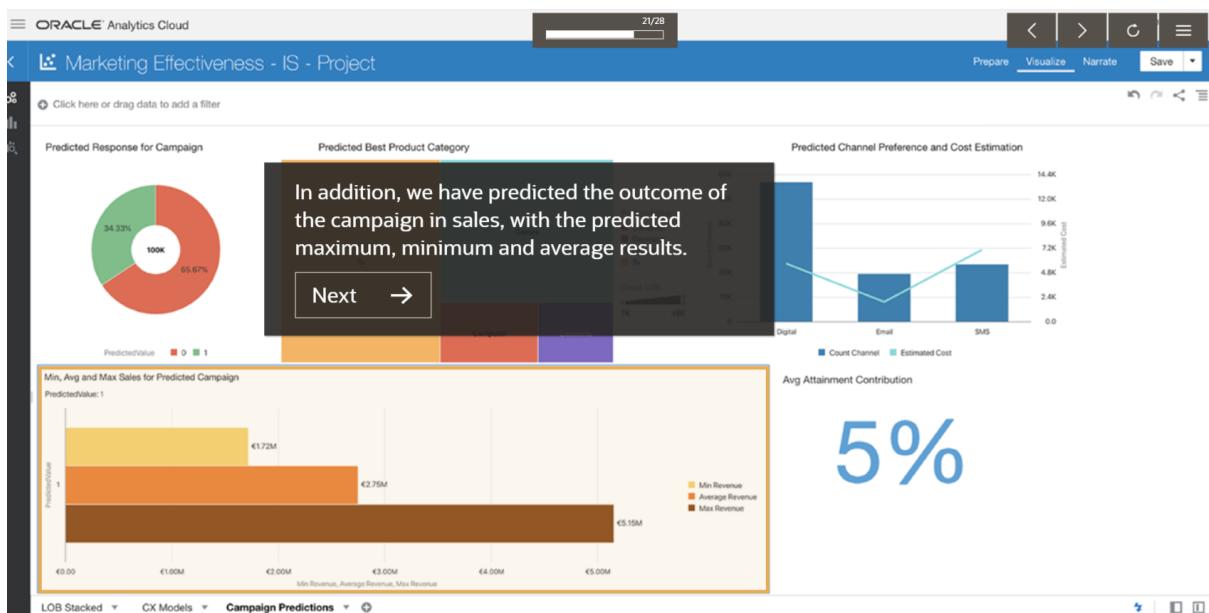
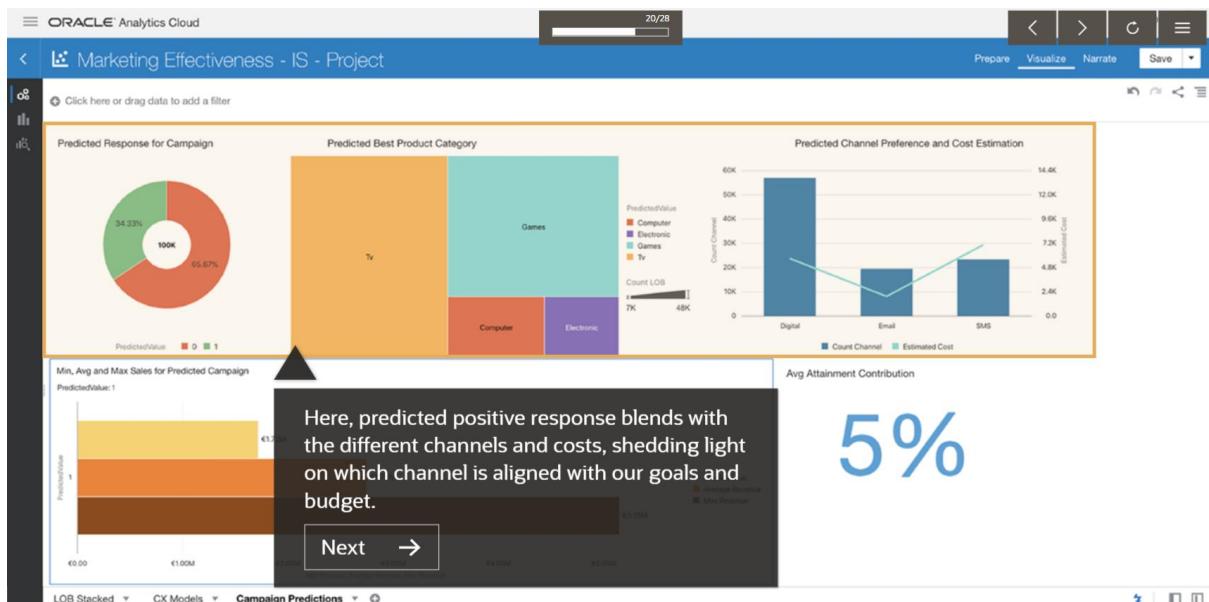
Lift Chart for Campaign Response Model

Model Facts

- Positive Response Prediction for **Campaign Response Model** is 34.33%
- Max Gain for **Campaign Response Model** is at 42% of population where we reach up to 77.63% of positive responses

While this is really interesting information, it may be too detailed for the senior management. Let's look at something more business-oriented.

→ Click **Campaign Predictions** tab

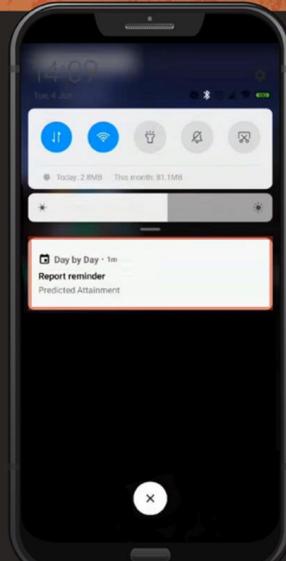


Objective 3 Complete



Nicely done! Your hard work and keen predictions have convinced the board to execute your Black Friday campaign. Let's explore how Oracle Day by Day can quickly show campaign results after all is said and done.

[Start Objective 4 →](#)



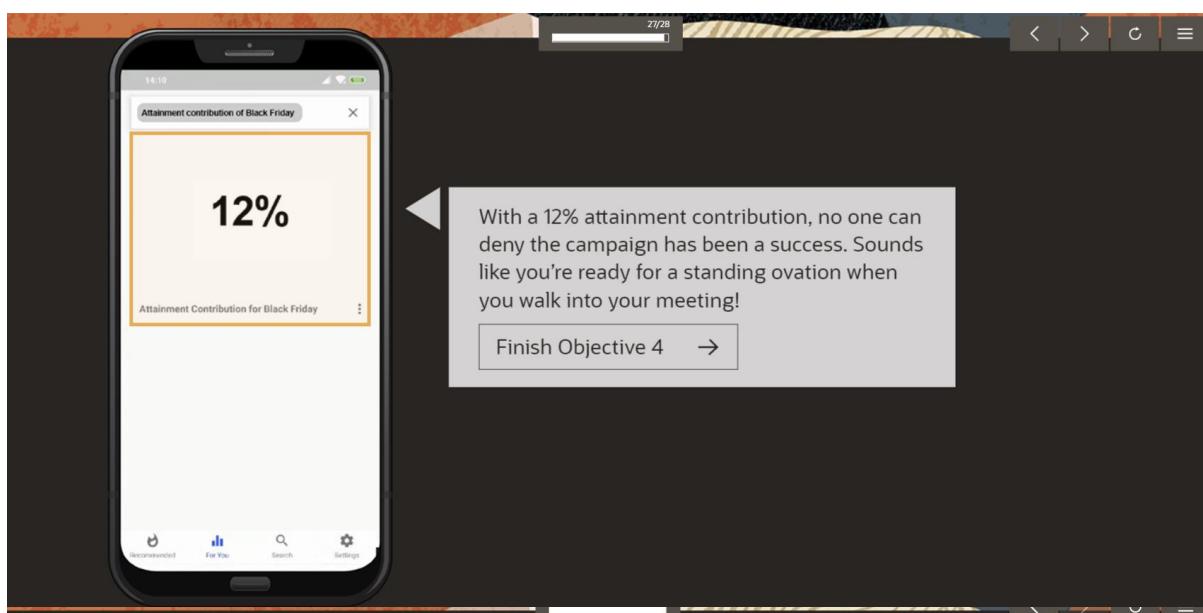
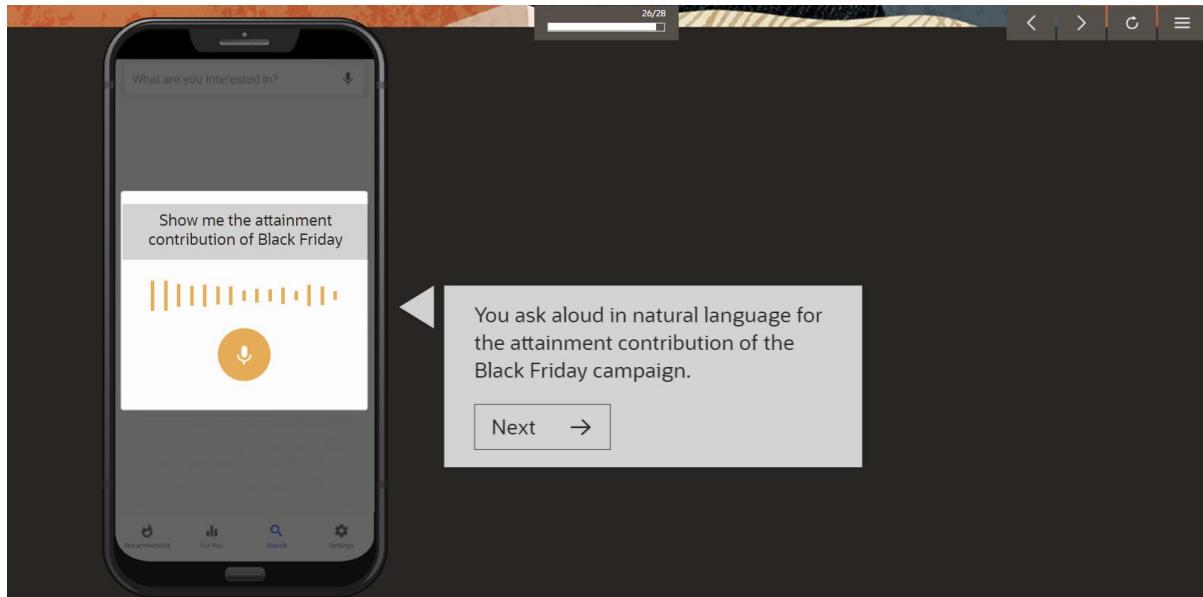
A few days after the campaign was executed, you receive a notification on your phone while en route to a steering committee. Oracle Day by Day detected the appointment, and proactively retrieves relevant information. Let's take a look.

→ Click **notification**



Great news! The predicted YTD attainment has raised significantly. Could it be your campaign is behind the success?

→ Click **Search**



Mission accomplished!



Well done! Oracle Analytics Cloud has combined multiple data sources to enable you to better understand your campaigns and how to create one that's truly a home run. Bravo!

REPORT

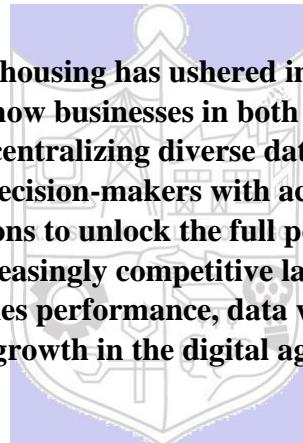
In the dynamic landscape of Information Technology (IT), where data reigns supreme, the implementation of data warehousing solutions has become indispensable.

Traditional approaches to data analysis in IT often involve grappling with disparate data silos scattered across various systems, leading to inefficiencies in data management and analysis. However, the advent of data warehousing has transformed this paradigm by offering a centralized repository where diverse datasets, ranging from server logs to application performance metrics, can be consolidated. This consolidation facilitates streamlined data access and analysis, enabling IT professionals to extract actionable insights from their data more efficiently. For instance, consider the scenario of optimizing server performance: with a data warehouse, IT teams can seamlessly extract data from different sources, transform it into a standardized format, and load it into a

centralized database. This database then serves as a foundation for in-depth analysis, empowering IT teams to identify performance bottlenecks, predict potential failures, and proactively optimize server configurations to ensure optimal performance and reliability.

Similarly, in the domain of sales, where data-driven decision-making is paramount, data warehousing plays a pivotal role in revolutionizing sales analytics. Traditional methods of sales analysis often involve manual data collection from disparate sources such as CRM systems, spreadsheets, and sales reports, leading to fragmented insights and suboptimal decision-making. However, with the advent of data warehousing, sales teams can transcend these limitations by consolidating sales data from various channels into a unified platform. This centralized repository enables sales managers to gain holistic insights into sales performance, customer behavior, and market trends, thereby empowering them to make informed decisions to drive revenue growth and enhance customer satisfaction. For example, consider the scenario of analyzing sales performance: with a data warehouse, sales teams can seamlessly extract sales data from different sources, transform it into actionable insights, and load it into a centralized database for comprehensive analysis. This analysis can help identify top-performing products, target high-value customers, and optimize sales strategies to maximize revenue and profitability.

Overall, the advent of data warehousing has ushered in a new era of data-driven decision-making, transforming how businesses in both the IT and sales domains harness the power of data analytics. By centralizing diverse datasets, streamlining data access and analysis, and empowering decision-makers with actionable insights, data warehousing enables organizations to unlock the full potential of their data assets and drive business success in an increasingly competitive landscape. From optimizing IT infrastructure to maximizing sales performance, data warehousing serves as a cornerstone for innovation and growth in the digital age.



Outcomes: Understanding of data warehousing and multi-dimensional modelling.

Conclusion: (Conclusion to be based on the outcomes achieved)

In conclusion, data warehousing is a transformative tool that empowers both IT and sales departments to harness the full potential of their data. By centralizing diverse datasets, streamlining analysis processes, and enabling data-driven decision-making,

data warehousing enhances operational efficiency, drives revenue growth, and fosters innovation. As businesses continue to navigate the complexities of the digital landscape, investing in robust data warehousing solutions will be essential for staying competitive and achieving sustainable success in the long term.

Grade: AA / AB / BB / BC / CC / CD /DD

Signature of faculty in-charge with date

References:

- <https://www.oracle.com/in/database/what-is-a-data-warehouse>
- Paulraj Ponniah, "Data Warehousing: Fundamentals for IT Professionals", Wiley India

