

# KOCH Foods

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# AGENDA

- ▶ BUSINESS SCENARIO
- ▶ DATA TREATMENT AND NORMALIZATION
- ▶ RELATIONAL SCHEMA AND ERD
- ▶ ANALYSIS DESCRIPTION
- ▶ SQL SCRIPTS
- ▶ RECOMMENDATION



# Business Scenario

- ▶ Rapid growth
  - ▶ Data with no information (Top Customers, Price Oscillation...)
  - ▶ Analysis under request (Efforts to import, customize and standardize)
- ▶ There is no list of the sales team present in the system.
  - ▶ It is exhaustive to verify the information about who is selling what for which customers.
  - ▶ Current Situation: Ask the salespeople to send a customer list to make cross analysis of performance and other evaluations.
  - ▶ Future Situation: Design and Implement data that enable the company evaluate the sales team as well as, create different KPIs regarding product, customer and region.

# Koch Food Sales Data

## ❑ Sales

- Sales ID, Date, Product Code, Product Description, Customer Name, Customer Vendor Number, Customer Region, Lbs, Unit Price, Total Value

## ❑ Product

- Product Code, Product Category, Product Weight, Product Type

## ❑ Customer

- Customer Vendor Number, Customer Name, Customer State, Business Type

## ❑ Salesperson

- Salesperson\_ID, Name, Office, Salary, Email ID

## ❑ Region

- Customer region, Region Name, RegionHQ\_ID, Region\_City, Address, Number of Employees, Regional Head

# Data Normalization Analysis

## Sales

1NF

SalesID	Date	Prod Code	Product Description	Customer Name	Cust Vend Num	Customer Regi	Lbs	Unit Price	Total Value
1	1/2020	370240	RAW B/SKLS 4OZ BRST WRM IF 12LB	Customer 1	1150	R21	312	3.23	\$1,007.76
2	2/2020	370240	RAW B/SKLS 4OZ BRST WRM IF 12LB	Customer 1	1150	R21	1248	3.23	\$4,031.04
3	3/2020	370240	RAW B/SKLS 4OZ BRST WRM IF 12LB	Customer 1	1150	R21	312	3.23	\$1,007.76
4	1/2020	370260	RAW B/SKLS 6OZ BRST FILT WRM IF 48/6OZ	Customer 1	1150	R21	2160	3.03	\$6,544.80

Product  
Code



Product  
Description

Customer  
Vend Number



Customer Name,  
Customer Region

## Product

3NF

Product Code	Product Data.GCF	Product Weight	Product Data.GCP10
370240	BRST	4 oz.	Split
370260	BRST	6 oz.	Split
370280	BRST	8 oz.	Whole Butterfly

## Customer

3NF

Customer Vendor Number	Customer Name	Customer State	Business Type
1150	Customer 1	MO	FoodService
1465	Customer 2	VA	FoodService
6601	Customer 3	CA	FoodService
10101	Customer 4	OR	FoodService

# Data Normalization Analysis

## □ Salesperson 3NF

SalesPerson_ID	Name	RegionalHQ_ID	Salary (USD)	Email ID
SM.1	Paul	100	1,00,000	paul@koch.com
SM.2	Jessica	200	1,20,000	jessica@koch.com
SM.3	Mike	100	1,10,000	mike@koch.com
SM.4	Max	200	95,000	max@koch.com

## □ Region

## 2NF – Transitive Dependency



Customer Region	Region Name	RegionHQ_ID	RegionHQ_City	Address	Number of Employees	Regional Head
R21	MidWest	100	Chicago	131 Street Avenue, Chicago	10000	Darren@koch.com
R41	MidAtlantic	200	New Jersey	352 Michigan Avenue, New Jersey	12000	Ismail@koch.com
R11	West	200	New Jersey	353 Michigan Avenue, New Jersey	6000	Ismail@koch.com
R42	NewEngland	200	New Jersey	354 Michigan Avenue, New Jersey	8000	Ismail@koch.com

## □ Office 3NF

RegionHQ_ID	Regional Head
100	Darren@koch.com
200	Ismail@koch.com
300	Olivia@koch.com

# Normalized Data

## □ Sales 3NF

SalesID	Date	Prod Code	Cust Vend Num	Lbs	Unit Price
1	1/2020	370240	1150	312	3.23
2	2/2020	370240	1150	1248	3.23
3	3/2020	370240	1150	312	3.23
4	1/2020	370260	1150	2160	3.03

- Product Description, Customer Region and Customer Name Removed

## □ Product 3NF

Product Code	Product Data.GCP3	Product Weight	Product Data.GCP10	Product Description
370240	BRST	4 oz.	Split	RAW B/SKLS 4OZ BRST WRM IF 12LB
370260	BRST	6 oz.	Split	RAW B/SKLS 6OZ BRST FILT WRM IF 48/6OZ
370280	BRST	8 oz.	Whole Butterfly	RAW B/SKLS 8OZ WBF WRM IF 24LB(3/16CT)
370250	BRST	5 oz.	Split	RAW B/SKLS 5OZ BRST WRM IF 15LB

## □ Customer 3NF

Customer Vendor Number	Customer Name	Customer State	Business Type	Customer Region
1150	Customer 1	MO	FoodService	R21
1465	Customer 2	VA	FoodService	R41
6601	Customer 3	CA	FoodService	R11
10101	Customer 4	OR	FoodService	R11
				R11

# Normalized Data

## □ Saleperson 3NF

SalesPerson_ID	Name	RegionalHQ_ID	Salary (USD)	Email ID
SM.1	Paul	100	1,00,000	paul@koch.com
SM.2	Jessica	200	1,20,000	jessica@koch.com
SM.3	Mike	100	1,10,000	mike@koch.com
SM.4	Max	200	95,000	max@koch.com

## □ Region 3NF

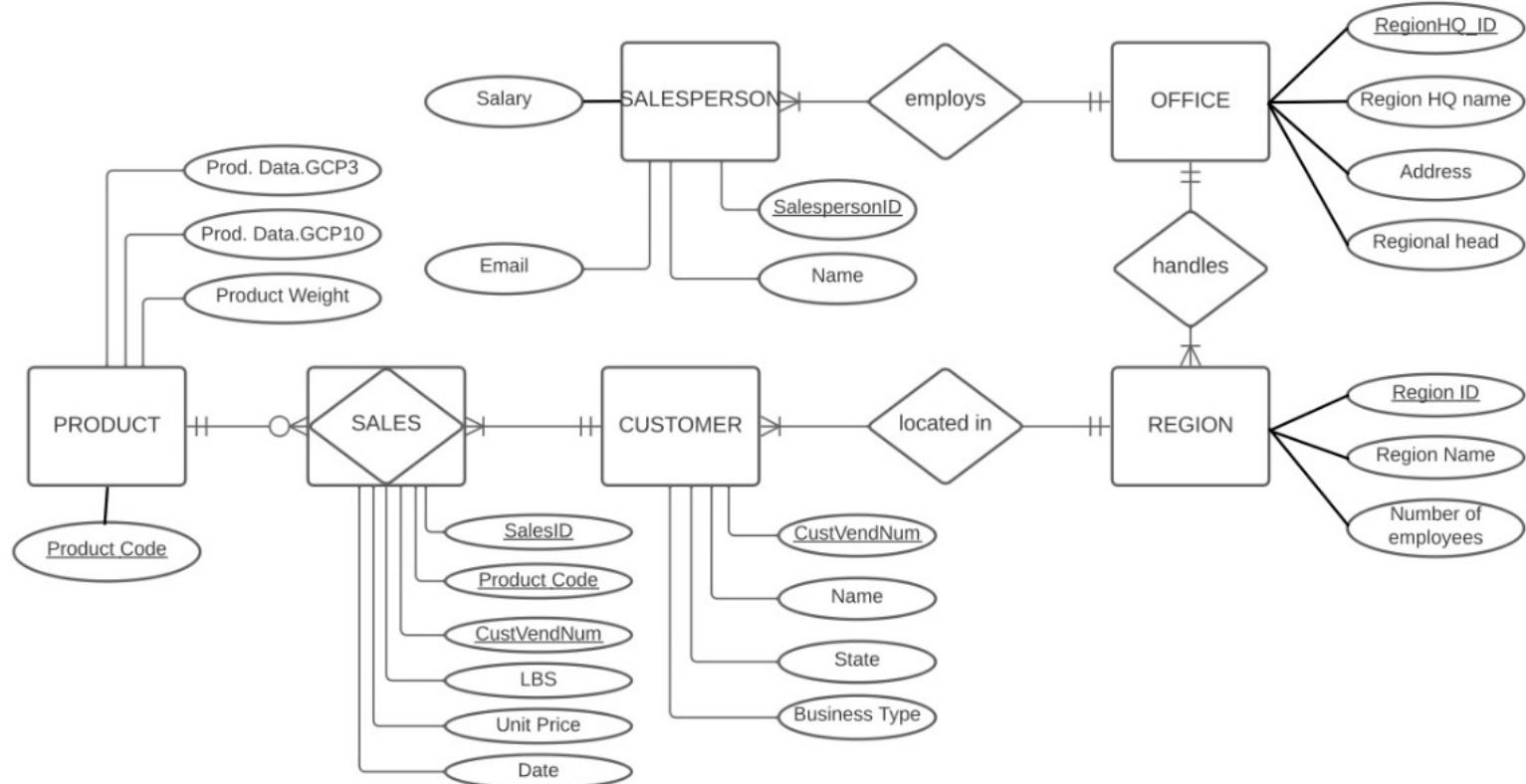
Customer Region	Region Name	RegionHQ_ID	Number of Employees
R21	MidWest	100	10000
R41	MidAtlantic	200	12000
R11	West	200	6000
R42	NewEngland	200	8000

- RegionalHQ\_City & Address Removed

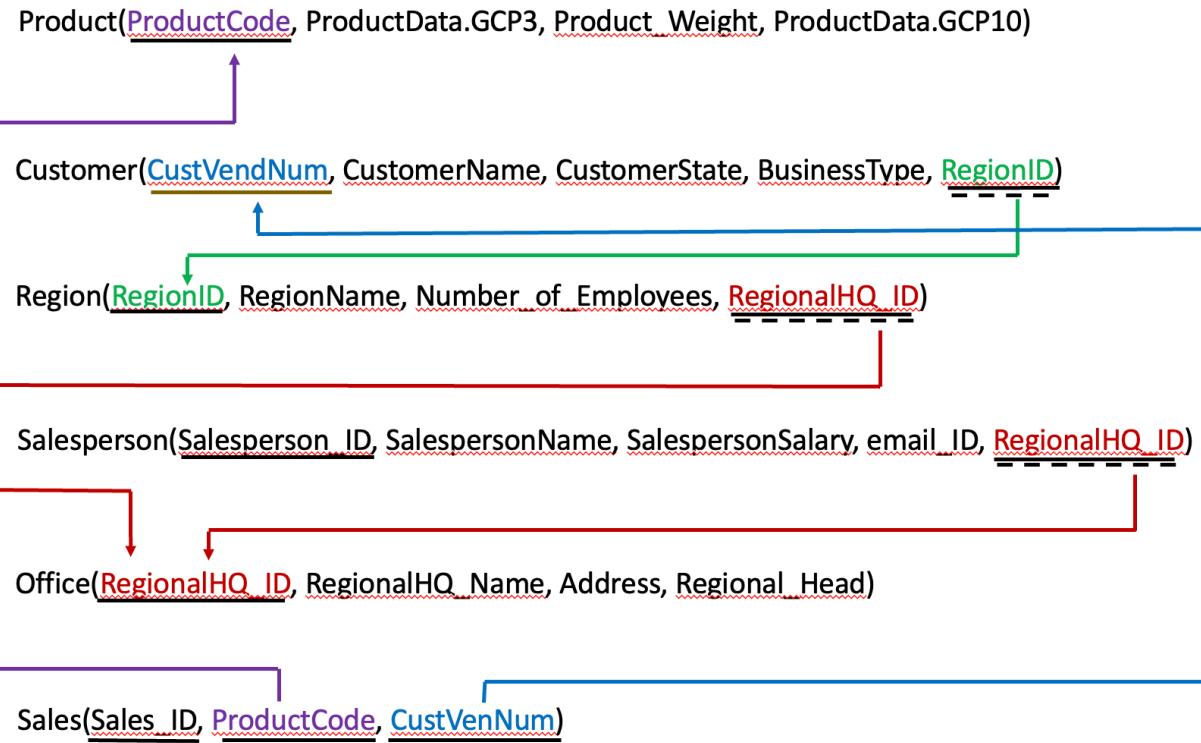
## □ Office 3NF

RegionHQ_ID	RegionalHQ_City	Address	Regional Head
100	Chicago	131 Street Avenue, Chicago	Darren@koch.com
200	New Jersey	352 Michigan Avenue, New Jersey	Ismail@koch.com
300	Houston	253 State Street, Houston	Olivia@koch.com

# ERD



# RELATIONAL SCHEMA



# ANALYSIS DESCRIPTION

- ▶ Product
  - ▶ Identify top selling product
- ▶ Salesperson performance
  - ▶ Rank salesperson by sales
- ▶ Customers
  - ▶ Identify top and bottom customers
- Office/geographical region
  - Customer count per office for workload balancing
  - Sales by region for marketing purposes
  - Product count (variety) per region for business development
- Overall performance
  - Sales performance over a determined period

# SQL Output - Analysis

Total Sales made by SM1 in 2020 by months

SalesPerson_ID	Salesperson_Name	Total_Sales	Period_y	Period_m
SM.1	Paul	\$ 910549.55	2020	1
SM.1	Paul	\$ 367429.71	2020	2
SM.1	Paul	\$ 288310.56	2020	3
SM.1	Paul	\$ 109224.52	2020	4
SM.1	Paul	\$ 213940.07	2020	5
SM.1	Paul	\$ 265679.17	2020	6
SM.1	Paul	\$ 253247.73	2020	7
SM.1	Paul	\$ 207958.44	2020	8
SM.1	Paul	\$ 269291.74	2020	9

Salesmen Ranking by Cumulative Sales for all the years

SalesPerson_ID	Salesperson_Name	Total_Sales	Min_Sales	Max_Sales	Avg_Sales
SM.5	Sarah	\$ 21328991.08	\$ 66.24	\$ 435389.76	\$ 10046.63
SM.2	Jessica	\$ 18882638.05	\$ -0.6	\$ 168114.12	\$ 10420.88
SM.1	Paul	\$ 17434851.04	\$ 181.24	\$ 918720	\$ 10958.42
SM.6	Joseph	\$ 17345726.83	\$ 34.86	\$ 190872	\$ 9838.76
na	na	\$ 14085131.3	\$ 69.84	\$ 330379.92	\$ 58203.02
SM.7	Bob	\$ 13006267.94	\$ 291.6	\$ 143457.6	\$ 13271.7
SM.4	Max	\$ 5534433.19	\$ -0.9	\$ 110373.12	\$ 9348.7
SM.3	Mike	\$ 3857644.52	\$ -0.6	\$ 97110	\$ 11053.42

Sales Performance in Midwest region for all the years combined

Region Name	Regional_HQ	Customer State	Customer_count	Product_count	Total_Sales	Min_Sales	Max_Sales	Avg_Sales
MidWest	Chicago	IA	3	4	\$ 857170.85	\$ 385.2	\$ 27668.52	\$ 7585.58
MidWest	Chicago	IL	8	6	\$ 7703255.77	\$ 215.62	\$ 918720	\$ 34389.53
MidWest	Chicago	KS	5	8	\$ 1972015.94	\$ 198	\$ 82920.61	\$ 4392.02
MidWest	Chicago	MN	6	5	\$ 1379663.84	\$ 388.8	\$ 85085.63	\$ 11593.81
MidWest	Chicago	MO	3	8	\$ 1317391.26	\$ 252.75	\$ 47483.28	\$ 4671.6
MidWest	Chicago	ND	1	2	\$ 362192.96	\$ 181.24	\$ 33668.31	\$ 6244.71
MidWest	Chicago	NE	1	3	\$ 427783.49	\$ 515.68	\$ 27775.8	\$ 7129.72
MidWest	Chicago	WI	6	5	\$ 3415376.93	\$ 240.45	\$ 67551.12	\$ 11941.88

# SQL Output - Analysis

Top 5 customers by Sales

Customer Vendor Number	Customer Name	Customer State	Business Type	Region	Total_Sales	Min_Sales	Max_Sales	Avg_Sales
338300	Customer 112	VA	FoodService		\$ 13601517.1	\$ 1566.63	\$ 330379.92	\$ 73126.44
16445	Customer 101	AR	FoodService	R31	\$ 5123856.72	\$ 43537.26	\$ 435389.71	\$ 197071.41
13870	Customer 251	IL	FoodService	R21	\$ 5121696.96	\$ 183744	\$ 918720	\$ 512169.77
11115	Customer 10	NY	FoodService	R42	\$ 3085671.23	\$ 1530	\$ 71550	\$ 14834.96
12390	Customer 26	AZ	FoodService	R11	\$ 2695235.94	\$ 564.72	\$ 98983.5	\$ 21912.49

Bottom 5 customers by Sales

Customer Vendor Number	Customer Name	Customer State	Business Type	Region	Total_Sales	Min_Sales	Max_Sales	Avg_Sales
72401	Customer 247	CA	FoodService		\$ 69.84	\$ 69.84	\$ 69.84	\$ 69.84
15744	Customer 153	MI	FoodService	R22	\$ 143.28	\$ 143.28	\$ 143.28	\$ 143.28
53901	Customer 86	AR	FoodService	R31	\$ 213.48	\$ 80.28	\$ 133.2	\$ 106.74
12235	Customer 200	MS	FoodService	R32	\$ 266.49	\$ 266.49	\$ 266.49	\$ 266.49
3041	Customer 202	LA	FoodService	R31	\$ 343.8	\$ 343.8	\$ 343.8	\$ 343.8

Top 5 Products by Sales

Product Code	Product Data.GCP3	Product Data.GCP10	Total_Sales	Min_Sales	Max_Sales	Avg_Sales
370240	BRST	Split	\$ 47303974.97	\$ -0.6	\$ 330379.92	\$ 15333.54
370250	BRST	Split	\$ 29647069.57	\$ 49.65	\$ 201954.96	\$ 12472.47
370260	BRST	Split	\$ 17084801.76	\$ 54.54	\$ 918720	\$ 14527.89
370280	BRST	Whole Butterfly	\$ 9907760.19	\$ 86.16	\$ 435389.76	\$ 14255.77
380260	BRST	Whole Butterfly	\$ 2343970.95	\$ -0.9	\$ 29975.24	\$ 4141.29

Bottom 5 Products by Sales

Product Code	Product Data.GCP3	Product Data.GCP10	Total_Sales	Min_Sales	Max_Sales	Avg_Sales
380250	BRST	Whole Butterfly	\$ 379236.41	\$ 47.85	\$ 15499.01	\$ 2118.64
370210	BRST	Whole Butterfly	\$ 617700.24	\$ 66.24	\$ 18557.44	\$ 2873.02
370230	BRST	Split	\$ 806814.86	\$ 91.66	\$ 18318.74	\$ 3091.24
380271	BRST	Whole Butterfly	\$ 1110751.14	\$ 82.53	\$ 23479.63	\$ 3560.1
390240	BRST	Split	\$ 2273603.86	\$ -0.6	\$ 71210.88	\$ 3879.87