

Project Overview

Introduction: In this project, analysing the Pizza Sales data to find out the trends and patterns to get the business insights and which help to make better decision to improve the sales. This data analysis project aims to provide insights into the sales performance of a Pizza company over the past year. By analysing various aspects of the sales data, I seek to identify trends, make data-driven recommendations, and gain a deeper understanding of the company's performance. A year's worth of sales from a fictitious pizza place, including the date and time of each order and the pizzas served, with additional details on the type, size, quantity, price, and ingredients.

Project Workflow

1. Business Requirement
2. Data Gathering
3. Data Cleaning / Transformations
4. Data Modelling (as per the data)
5. Create Report and visuals

Business Questions:

1. How many customers do we have each day? Are there any peak hours?
2. How many pizzas are typically in an order? Do we have any bestsellers?
3. How much money did we make this year? Can we identify any seasonality in the sales?
4. Are there any pizzas we should take of the menu, or any promotions we could leverage?

Datasets:

The primary dataset used for this analysis is the "sales_data.csv" file, containing detailed information about each sale made by the company. There is 4 datasets containing the details of sale and order details.

Pizza Id	Pizza Type Id	Size	Price
bbq_ckn_s	bbq_ckn	S	12.75
bbq_ckn_m	bbq_ckn	M	16.75
bbq_ckn_l	bbq_ckn	L	20.75
cali_ckn_s	cali_ckn	S	12.75
cali_ckn_m	cali_ckn	M	16.75
cali_ckn_l	cali_ckn	L	20.75
ckn_alfredo_s	ckn_alfredo	S	12.75
ckn_alfredo_m	ckn_alfredo	M	16.75
ckn_alfredo_l	ckn_alfredo	L	20.75
ckn_pesto_s	ckn_pesto	S	12.75
ckn_pesto_m	ckn_pesto	M	16.75
ckn_pesto_l	ckn_pesto	L	20.75
southw_ckn_s	southw_ckn	S	12.75
southw_ckn_m	southw_ckn	M	16.75

Figure 1.1: Pizzas table.

Pizza Type Id	Name	Category	Ingredients
bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers, Tomatoes, Red Onions, Barbecue Sauce
cali_ckn	The California Chicken Pizza	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno Peppers, Fontina Cheese, Gouda Cheese
ckn_alfredo	The Chicken Alfredo Pizza	Chicken	Chicken, Red Onions, Red Peppers, Mushrooms, Asiago Cheese, Alfredo Sauce
ckn_pesto	The Chicken Pesto Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Spinach, Garlic, Pesto Sauce
southw_ckn	The Southwest Chicken Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Red Onions, Jalapeno Peppers, Corn, Cilantro, Chipotle Sauce
thai_ckn	The Thai Chicken Pizza	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce
big_meat	The Big Meat Pizza	Classic	Bacon, Pepperoni, Italian Sausage, Chorizo Sausage
classic_dlx	The Classic Deluxe Pizza	Classic	Pepperoni, Mushrooms, Red Onions, Red Peppers, Bacon
hawaiian	The Hawaiian Pizza	Classic	Sliced Ham, Pineapple, Mozzarella Cheese
ital_cpcllo	The Italian Capocollo Pizza	Classic	Capocollo, Red Peppers, Tomatoes, Goat Cheese, Garlic, Oregano
napolitana	The Napolitana Pizza	Classic	Tomatoes, Anchovies, Green Olives, Red Onions, Garlic
pep_msh_pep	The Pepperoni, Mushroom, and Peppers Pizza	Classic	Pepperoni, Mushrooms, Green Peppers
pepperoni	The Pepperoni Pizza	Classic	Mozzarella Cheese, Pepperoni
the_greek	The Greek Pizza	Classic	Kalamata Olives, Feta Cheese, Tomatoes, Garlic, Beef Chuck Roast, Red Onions
brie_carre	The Brie Carre Pizza	Supreme	Brie Carre Cheese, Prosciutto, Caramelized Onions, Pears, Thyme, Garlic
calabrese	The Calabrese Pizza	Supreme	'Nduja Salami, Pancetta, Tomatoes, Red Onions, Friggitello Peppers, Garlic
ital_supr	The Italian Supreme Pizza	Supreme	Calabrese Salami, Capocollo, Tomatoes, Red Onions, Green Olives, Garlic
peppr_salami	The Pepper Salami Pizza	Supreme	Genoa Salami, Capocollo, Pepperoni, Tomatoes, Asiago Cheese, Garlic

Figure 1.2: Pizza Type table.

Order Id	Date	Time	Time Slot	Time Slot Sorting
19402	27 November 2015	11:21:54	9 -12 AM	1
19403	27 November 2015	11:29:51	9 -12 AM	1
19404	27 November 2015	11:32:40	9 -12 AM	1
19405	27 November 2015	11:36:39	9 -12 AM	1
19406	27 November 2015	11:46:40	9 -12 AM	1
19407	27 November 2015	11:47:35	9 -12 AM	1
19408	27 November 2015	11:54:49	9 -12 AM	1
19409	27 November 2015	12:02:51	12 -3 PM	2
19410	27 November 2015	12:09:16	12 -3 PM	2
19411	27 November 2015	12:13:36	12 -3 PM	2
19412	27 November 2015	12:15:07	12 -3 PM	2
19413	27 November 2015	12:22:17	12 -3 PM	2
19414	27 November 2015	12:24:55	12 -3 PM	2
19415	27 November 2015	12:25:45	12 -3 PM	2
19416	27 November 2015	12:26:53	12 -3 PM	2
19417	27 November 2015	12:30:45	12 -3 PM	2
19418	27 November 2015	12:41:58	12 -3 PM	2

Figure 1.3: Orders table.

Order Details Id	order Id	Pizza Id	Quantity
36	15	big_meat_s	1
56	20	big_meat_s	1
79	32	big_meat_s	1
101	42	big_meat_s	1
150	64	big_meat_s	1
174	76	big_meat_s	1
180	78	big_meat_s	1
192	82	big_meat_s	1
230	97	big_meat_s	1
262	110	big_meat_s	1
276	115	big_meat_s	1
302	129	big_meat_s	1
316	134	big_meat_s	1
343	144	big_meat_s	1
388	162	big_meat_s	1

Figure 1.4: Orders Details table.

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1 Date Table = ADDCOLUMNS(
2     CALENDAR(MIN('Orders'[Date]),MAX('Orders'[Date])),
3     "Year", YEAR([Date]),
4     "Month", FORMAT([Date],"mmm"),
5     "Month No", MONTH([Date]),
6     "Quarter", FORMAT([Date],"\\QQ"),
7     "Day", FORMAT([Date],"ddd"),
8     "Day No", WEEKDAY([DATE])
9 )

```

Date	Year	Month	Month No	Quarter	Day	Day No
01/07/2015 00:00:00	2015	Jul	7	Q3	Wed	4
02/07/2015 00:00:00	2015	Jul	7	Q3	Thu	5
03/07/2015 00:00:00	2015	Jul	7	Q3	Fri	6
04/07/2015 00:00:00	2015	Jul	7	Q3	Sat	7
05/07/2015 00:00:00	2015	Jul	7	Q3	Sun	1
06/07/2015 00:00:00	2015	Jul	7	Q3	Mon	2
07/07/2015 00:00:00	2015	Jul	7	Q3	Tue	3
08/07/2015 00:00:00	2015	Jul	7	Q3	Wed	4
09/07/2015 00:00:00	2015	Jul	7	Q3	Thu	5
10/07/2015 00:00:00	2015	Jul	7	Q3	Fri	6
11/07/2015 00:00:00	2015	Jul	7	Q3	Sat	7
12/07/2015 00:00:00	2015	Jul	7	Q3	Sun	1
13/07/2015 00:00:00	2015	Jul	7	Q3	Mon	2
14/07/2015 00:00:00	2015	Jul	7	Q3	Tue	3
15/07/2015 00:00:00	2015	Jul	7	Q3	Wed	4
16/07/2015 00:00:00	2015	Jul	7	Q3	Thu	5
17/07/2015 00:00:00	2015	Jul	7	Q3	Fri	6
18/07/2015 00:00:00	2015	Jul	7	Q3	Sat	7
19/07/2015 00:00:00	2015	Jul	7	Q3	Sun	1
20/07/2015 00:00:00	2015	Jul	7	Q3	Mon	2

Figure 1.5: Created Date table.

Data Transformation / Cleaning:

1. Renaming Tables and Columns as per the reporting format
2. Promoting Row to Header
3. Data Type check
4. Replacing null value with zero ("0 ")
5. Create new table for date as a "Date table" using the DAX concept below:

Date Table = ADDCOLUMNS(

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CALENDAR(MIN('Orders'[Date]),MAX('Orders'[Date])),

"Year", YEAR([Date]),

"Month", FORMAT([Date],"mmm"),

"Month No", MONTH([Date]),

"Quarter", FORMAT([Date],"\\QQ"),

"Day", FORMAT([Date], "ddd"),

"Day No", WEEKDAY([DATE])

)

```

6. Calculate necessary measures.

1. Data was efficiently cleaned and transformed with the Power Query Editor of Power BI. [a screenshot of the applied steps] Some of the applied steps included. There is a four-dataset named as "Order details", "Pizza Type", "Pizzas", making first row as headers and rename the header names accordingly our needs.
2. Analytical transformation of the 'order table'; to have an idea of how long it takes on average for orders to be delivered, [delivery days] need to be calculated. Using "custom columns", delivery days = [shipped date] - [order date].
3. Created new column for year of order date and named: [Order Year].
4. ADDING conditional column to the 'Returns Table' to assign a numeric value to the Return response of YES and NO. If YES, then 1, else 0. Return Orders = IF(Returns[Returned] = "Yes", 1, 0).
5. Datatype then changed from 'TEXT' TO 'WHOLE NUMBER'.

Data Modelling

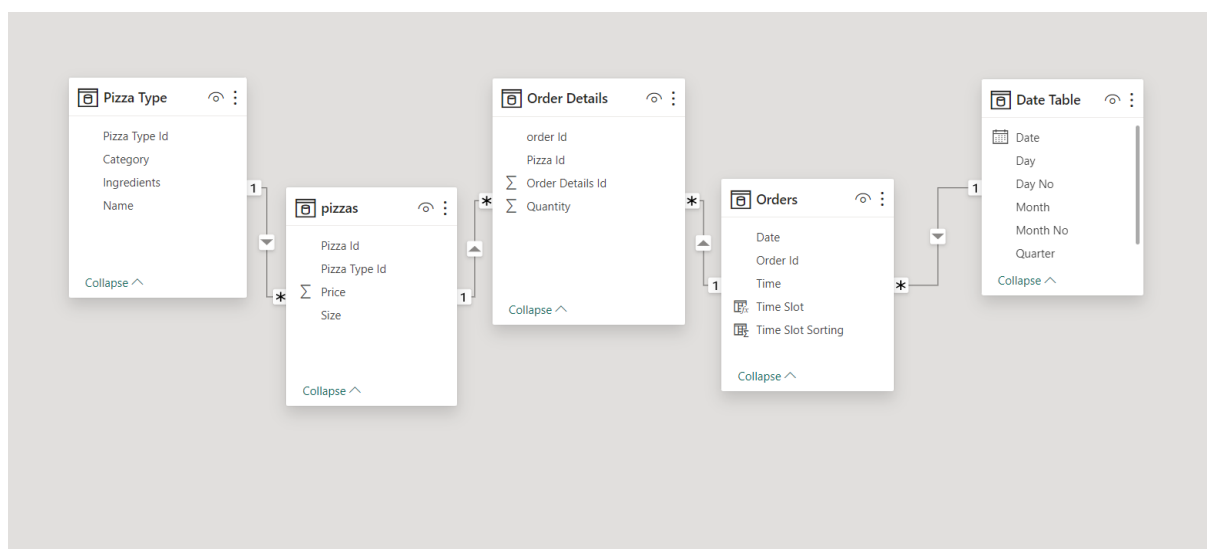


Figure 4.1: Data Model.

Results/Findings

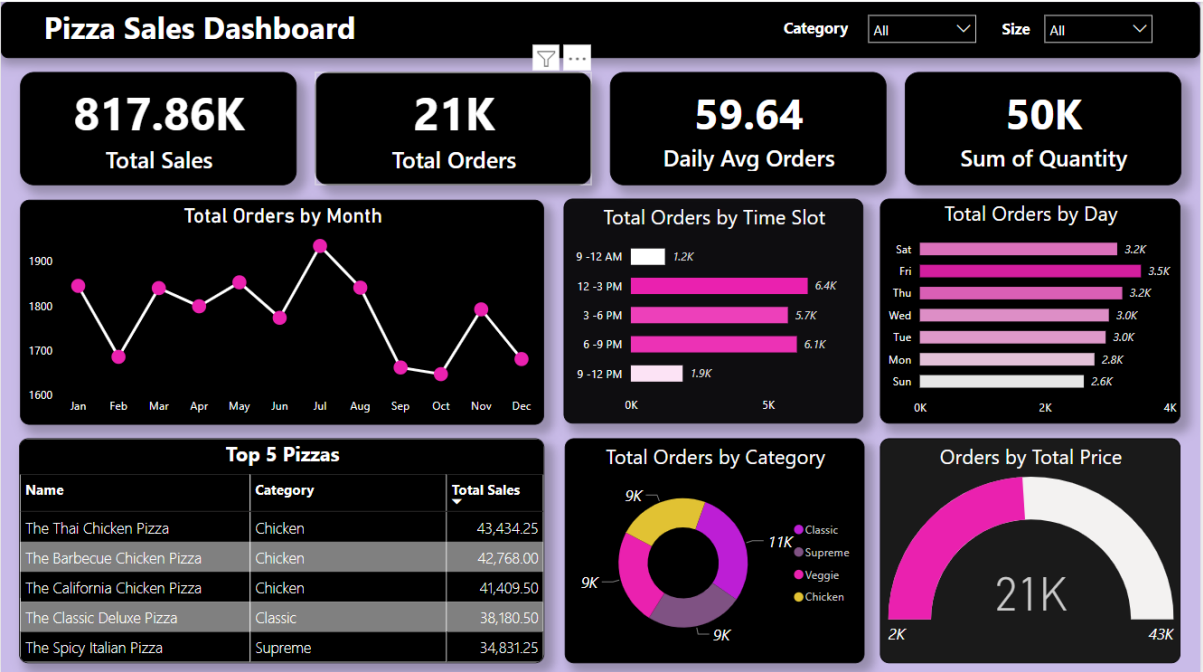


Figure 5.1: Dashboard-1.



Figure 5.2: Dashboard-2.

The analysis results are summarized as follows:

- The company's sales have been steadily increasing over the past year, with a noticeable peak during the holiday season.
- Top 5 pizza is the best-performing category in terms of sales and revenue and Bottom 5 is the least performing category in terms of sales and revenue.
- Customer segments with high lifetime value (LTV) should be targeted for marketing efforts.

Conclusions & Recommendations

Based on the analysis, we recommend the following actions:

- Invest in marketing and promotions during peak sales seasons to maximize revenue.
- Focus on expanding and promoting products in top 5 pizzas. Giving discounts or offers would be increase the sales of bottom 5 pizzas.
- Implement a customer segmentation strategy to target high-LTV customers effectively.

Limitations

I had to remove all zero values from budget and revenue columns because they would have affected the accuracy of my conclusions from the analysis. There are still a few outliers even after the omissions but even then, we can still see that there is a positive correlation between both budget and number of votes with revenue. Additionally, gather relevant data on your customers, including their transaction history, demographics, browsing behaviours, engagement with marketing campaigns, and any other relevant information. Analyse this data to identify patterns and trends that can help your business growth.