

PPS Pizza Sales Performance Analysis



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Overview



Executive Summary

Objective

Analyzing performance from 2015, identify key trends, so it can help **PPS Pizza** to increase the sales

Analysis

To increase sales in early 2017, utilize market basket analysis

Recommendation

Created discounted pizza bundles

Profile

PPS Pizza is a pizza restaurant that focused on serving a variety of high quality pizzas. Offering delicious pizza options in various size and types

Background



The **Sales** from **January - December** is decreasing about **7.28%**.

How to increase the sales by **10%** in next early 2017?

Company Overview



\$817.86K

Total Sales



21350

Customer



48620

Total Order



49574

Total Quantity



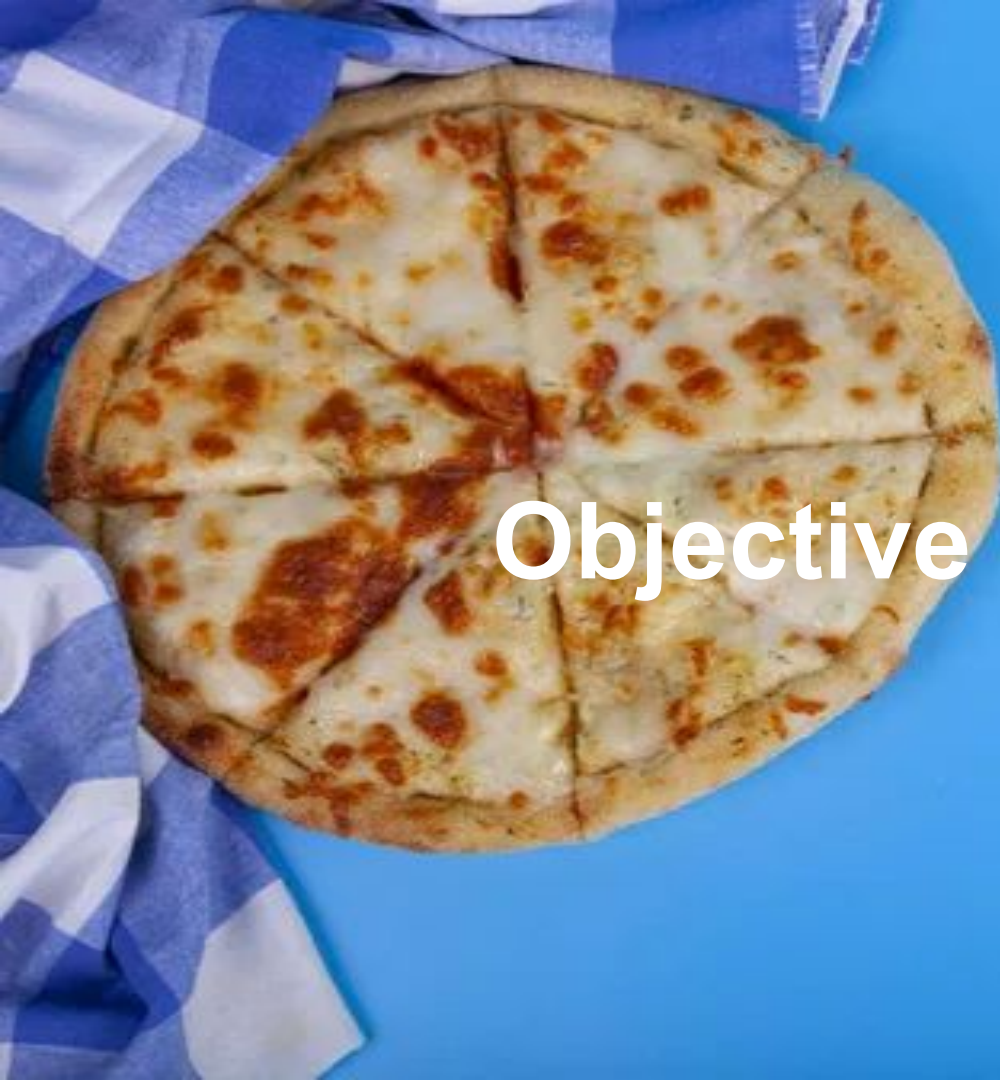
2

Average Customer Order



\$38

AOV



Objective & Scope

Objective & Scope

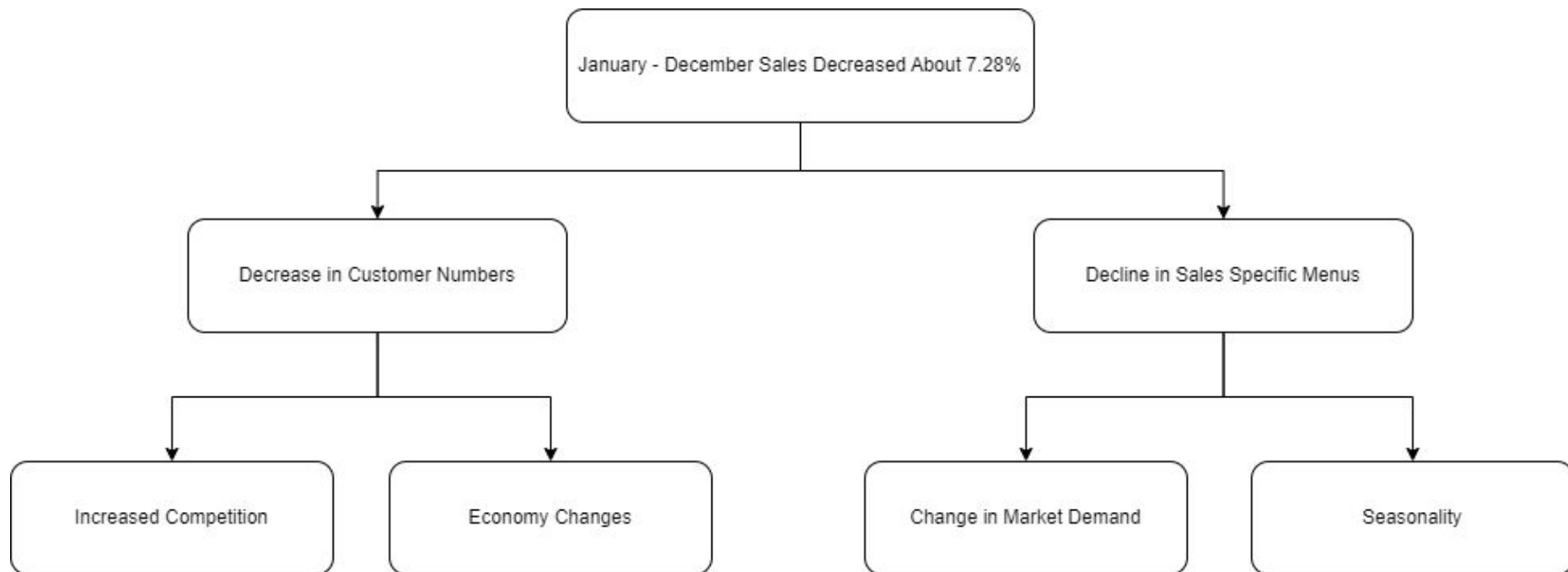
Objective

How to increase the sales by **8-10%** in next early 2017?

Scope

Using data from 2015, which encompassing a year's worth of sales

Root Cause



Methodology

Design

- Define the objective and scope
- Define Hypothesis

Conduct

- Using pizza place sales data from [Maven Analytics](#)
- Conducting data gathering and data cleaning using python and visualizing it in power bi

Synthesize

- Analyzing the data using python
- Summarize and interpret the result



Data Exploration

3 Data Exploration

AOV experienced increase



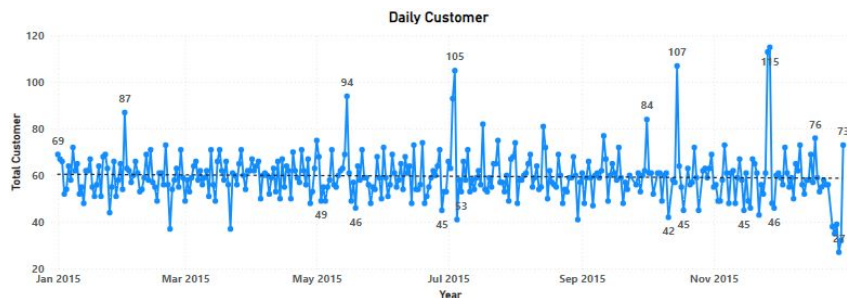
The **AOV** increased from **\$37.83** in January to **\$38.51** in December, about 1.78%.

Total Order decreased from July



Total order decreased from **4301** in January to **3935** in December, about 10.27%.

Daily Customer



60

Average Daily Customer

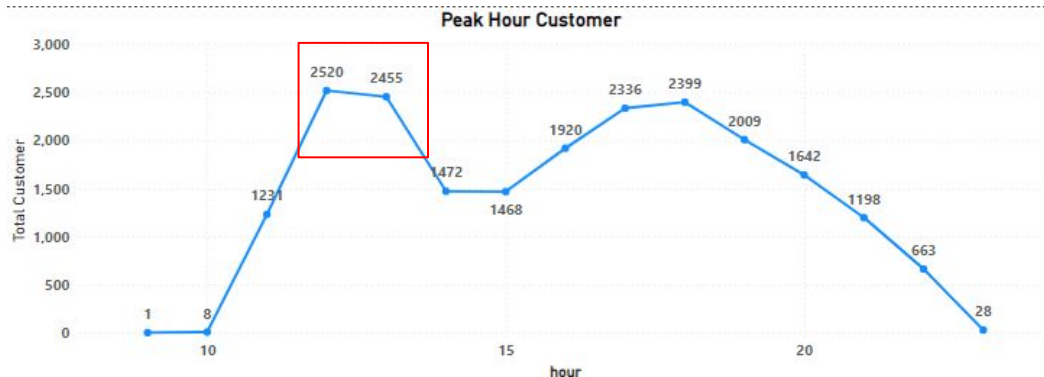
There are **60** Daily Customer.

From July, customer keep decrease



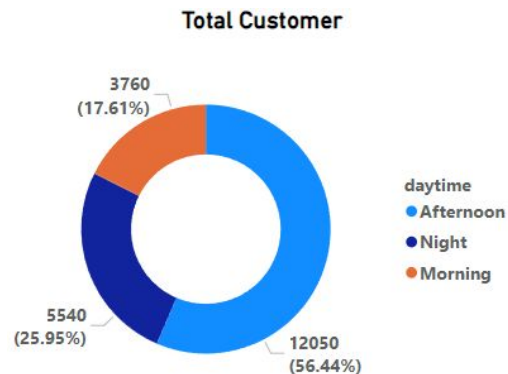
Starting from **July**, the number of customer **decreased about 13.19%**.

Peak Hour



The **busiest hour** is in **12** and **1PM**.

Most Customer come in afternoon



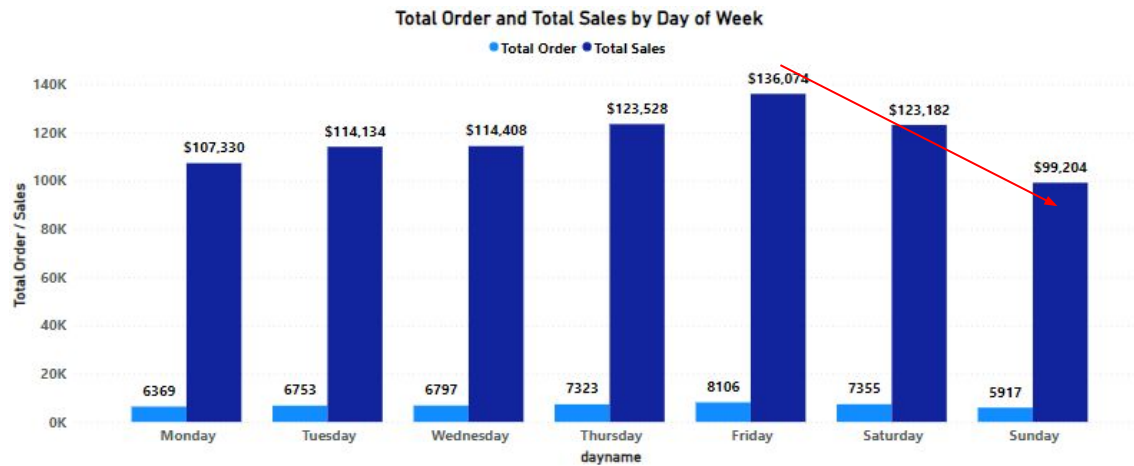
About **56.44%** customer come in afternoon.

Decrease in July



Decrease on July, the total order and total quantity.

A Increase in **Weekday** contrasted with **Weekend** Decline



Friday is the **busiest day** with **8106 order**, while **Sunday** is the **least busy day** with only **5917 order**.

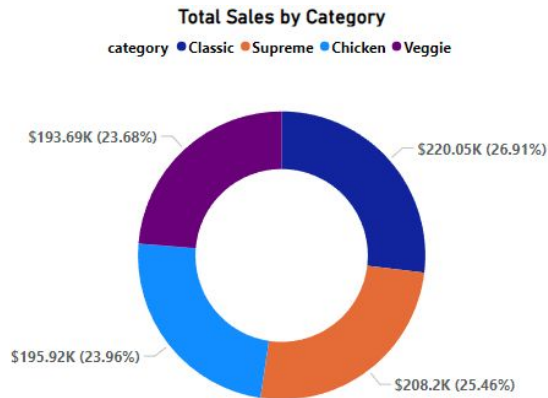
Classic category has generated the highest sales and quantity

Pizza Category	Total Order	Total Quantity	Total Sales
Classic	14579	14888	\$220,053
Supreme	11777	11987	\$208,197
Chicken	10815	11050	\$195,919.5
Veggie	11499	11649	\$193,690.45

From July, sales decreased

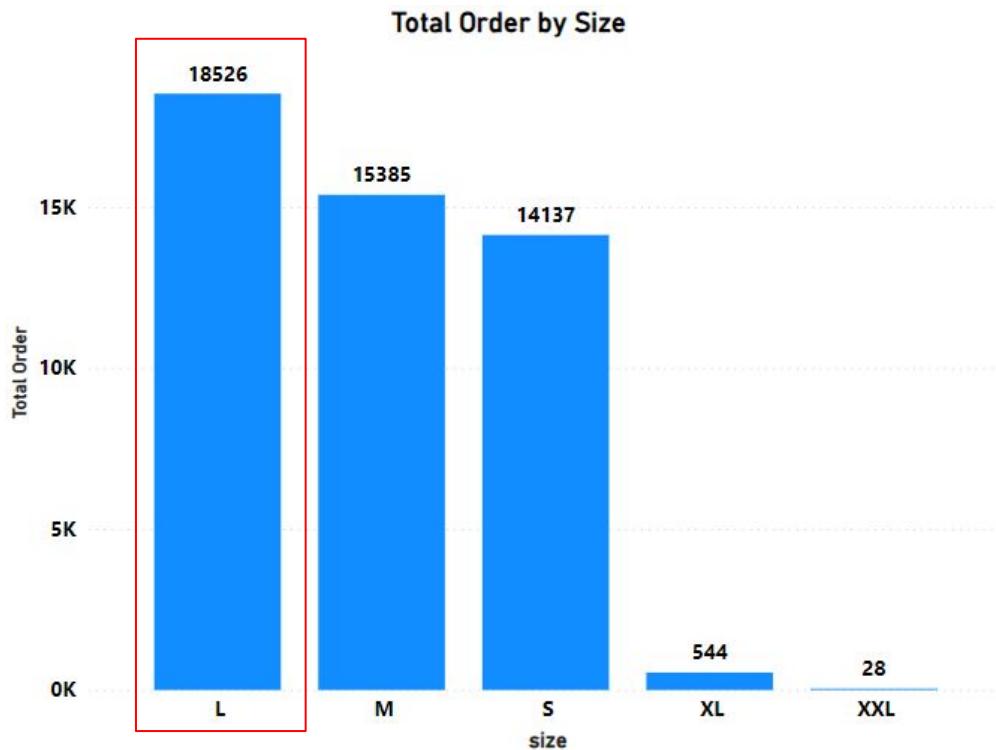


The **sales decline** from **July** to **December**, with the **Veggie** category showing the worst performance.



The **Classic** category experienced the highest **sales gain**.

The most **order** is in the '**L size**'



'L' size has the highest number of orders, accounting for **38.09%** of the total order.

We might consider removing the '**XL**' and '**XXL**' sizes due to fewer orders, or we could focus on the '**L**', '**M**', and '**S**' sizes instead.

The Thai Chicken Pizza generates the highest sales and The Brie Carre Pizza has the lowest sales and quantity

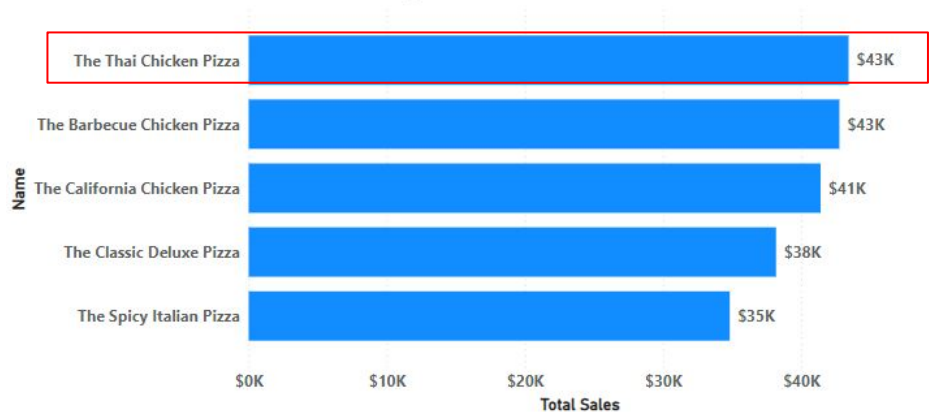
26K

Average Pizza Sales

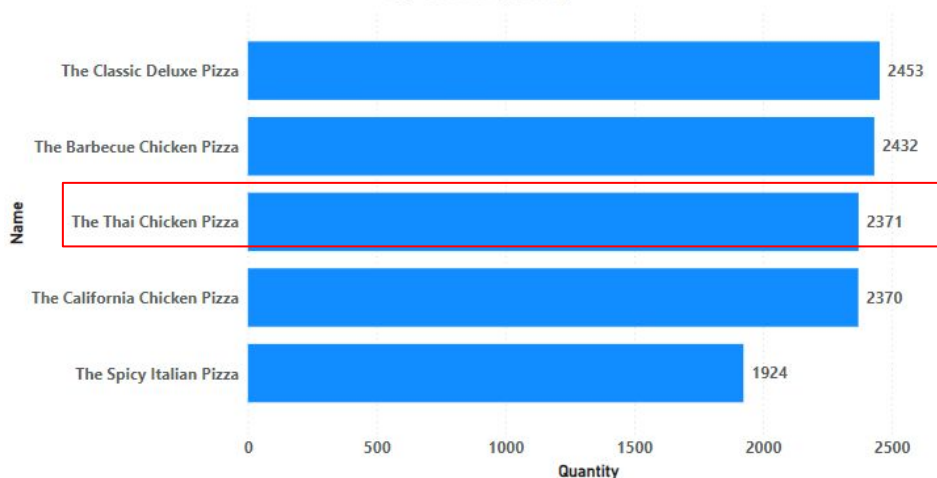
1549

Average Pizza Quantity

Top 5 Pizza Sales



Top 5 Pizza Quantity



The Thai Chicken Pizza contributes 5.3% of the total sales.

We could focus on serving the top 5 menus.

The Thai Chicken Pizza generates the highest **sales** and The Brie Carre Pizza has the lowest sales and quantity

26K

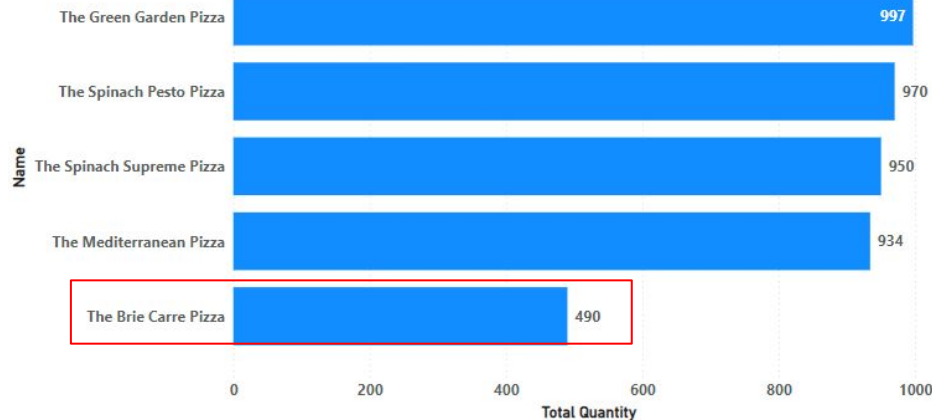
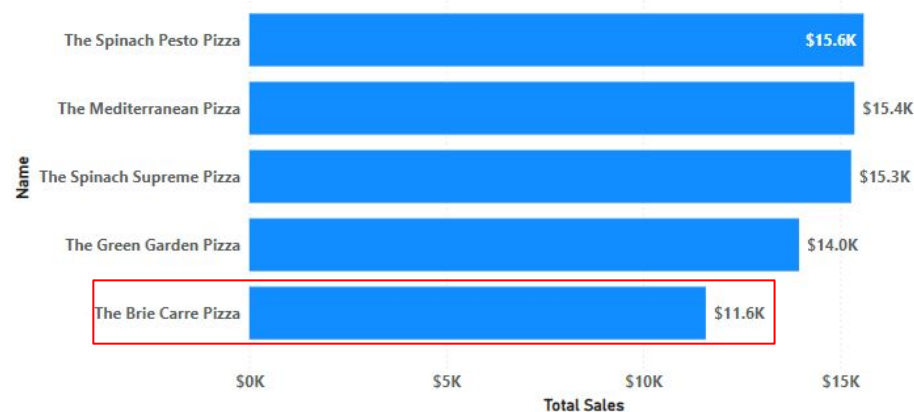
Average Pizza Sales

1549

Average Pizza Quantity

Worst 5 Pizza Sales

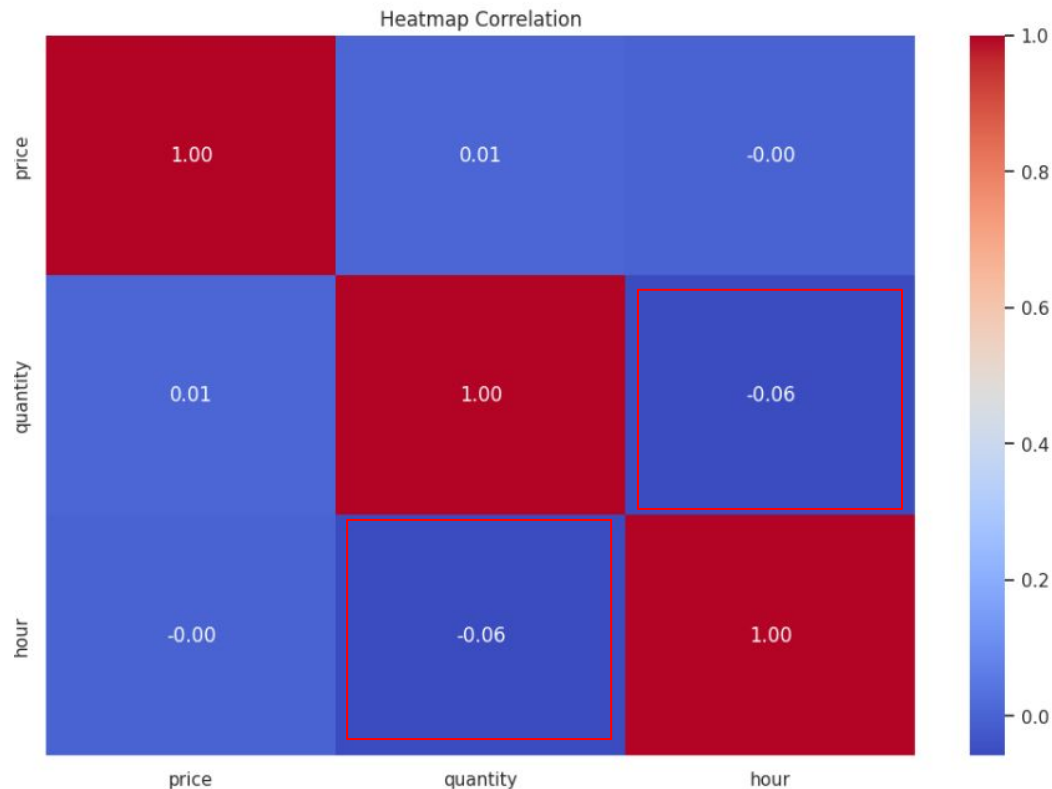
Worst 5 Pizza Quantity



The Brie Carre Pizza contributes **1.47%** of the total sales.

We could consider to removing the menu or adding a promotion.

Correlation negative relationship between hour and quantity



- The value of the correlation between hour and quantity indicates a weak negative relationship.
- It shows that as the night progresses, the quantity of pizza order tends to decrease with a very weak relationship.

Insight Summary

- The total **sales** gain is **\$817,860**
- The **sales** from **January** to **December** is **decreasing** about **7.28%**.
- There are **60** daily customer, and **Average customer order** pizza is **2**
- The total **order** is **48,620** and **quantity** sold is **49,574**
- Start from **July**, the number of **customer decrease** about **13.19%**
- About **56.44%** **customer** come in **afternoon**
- **Sales increased** steadily from **Monday through Friday**, but **decline** over the **weekend**
- **Friday** is the **busiest day** with **8106 order**, while **Sunday** is the **least busy day** with only **5917 order**
- **Classic Pizza** category has the highest **sales** and **quantity**
- Customer prefer '**L-Size**' pizza
- **The Thai Chicken Pizza** is the top and **The Brie Carre Pizza** worst



Recommendation

Recommendation

Creating bundles of combination pizzas at a discounted price can be a solution to address the issue of decreasing sales

Offering combination pizza bundles at discounted prices can **incentivize customers to make larger purchases**, as they perceive greater value in their order. This strategy not only encourages customers to buy more pizzas at once, but also prompts them to **explore different menu variations**. By leveraging the bundles offers instead of individual, businesses can effectively boost customer interest and drive sales.

Recommendation

Top Pizza

- (The Hawaiian Pizza) -> (The Thai Chicken Pizza)
- (The Big Meat Pizza) -> (The Sicilian Pizza)
- (The Thai Chicken Pizza) -> (The Big Meat Pizza)

Top/Mid and Mid/Mid Pizza

- (The Hawaiian Pizza) -> (The Mexicana Pizza)
- (The Vegetables + Vegetables Pizza) -> (The Italian Supreme Pizza)
- (The Greek Pizza) -> (The Four Cheese Pizza)

Top/Less and Mid/Less Pizza

- (The Brie Carre Pizza) -> (The Barbecue Chicken Pizza)
- (The Italian Vegetables Pizza) -> (The Four Cheese Pizza)
- (The Chicken Pesto Pizza) -> (The Classic Deluxe Pizza)

A whole pepperoni pizza is shown on a bright blue background. The pizza is cut into eight slices and has a thick, golden-brown crust. It is topped with melted cheese and several slices of pepperoni. To the left of the pizza, there is a blue and white checkered cloth. The word "Appendix" is written in white, sans-serif font across the middle of the image, partially overlapping the pizza and the blue background.

Appendix

Pizza Bundling

name	quantity
The Classic Deluxe Pizza	2453
The Barbecue Chicken Pizza	2432
The Hawaiian Pizza	2422
The Pepperoni Pizza	2418
The Thai Chicken Pizza	2371
The California Chicken Pizza	2370
The Sicilian Pizza	1938
The Spicy Italian Pizza	1924
The Southwest Chicken Pizza	1917
The Big Meat Pizza	1914
The Four Cheese Pizza	1902
The Italian Supreme Pizza	1884
The Vegetables + Vegetables Pizza	1526
The Mexicana Pizza	1484
The Napolitana Pizza	1464
The Prosciutto and Arugula Pizza	1457

name	quantity
The Spinach and Feta Pizza	1446
The Pepper Salami Pizza	1446
The Italian Capocollo Pizza	1438
The Greek Pizza	1420
The Five Cheese Pizza	1409
The Pepperoni, Mushroom, and Peppers Pizza	1359
The Green Garden Pizza	997
The Chicken Alfredo Pizza	987
The Italian Vegetables Pizza	981
The Chicken Pesto Pizza	973
The Spinach Pesto Pizza	970
The Soppressata Pizza	961
The Spinach Supreme Pizza	950
The Calabrese Pizza	937
The Mediterranean Pizza	934
The Brie Carre Pizza	490

Total Pizza Quantity
sold

Pizza Bundling

Using min_support =
0.01
(First 10)

Find Pizza Bundling for each
recommendation with lift > 1

antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage	conviction	zhangs_metric
(The Hawaiian Pizza)	(The Thai Chicken Pizza)	0.140752	0.141136	0.020721	0.147219	1.043103	0.000856	1.007134	0.048091
(The Thai Chicken Pizza)	(The Hawaiian Pizza)	0.141136	0.140752	0.020721	0.146819	1.043103	0.000856	1.007111	0.048112
(The Barbecue Chicken Pizza)	(The Pepperoni Pizza)	0.142671	0.146508	0.020645	0.144701	0.987669	-0.000258	0.997888	-0.014354
(The Pepperoni Pizza)	(The Barbecue Chicken Pizza)	0.146508	0.142671	0.020645	0.140911	0.987669	-0.000258	0.997952	-0.014417

Pizza Bundling

Using min_support =
0.02
(First 30)

Find Pizza Bundling for each
recommendation with lift > 1

antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage	conviction	zhangs_metric
(The Mexicana Pizza)	(The Hawaiian Pizza)	0.091481	0.140752	0.014812	0.161913	1.150340	0.001936	1.025249	0.143851
(The Hawaiian Pizza)	(The Mexicana Pizza)	0.140752	0.091481	0.014812	0.105234	1.150340	0.001936	1.015371	0.152100
(The Italian Supreme Pizza)	(The Vegetables + Vegetables Pizza)	0.112049	0.092325	0.011742	0.104795	1.135056	0.001397	1.013929	0.134001
(The Vegetables + Vegetables Pizza)	(The Italian Supreme Pizza)	0.092325	0.112049	0.011742	0.127182	1.135056	0.001397	1.017338	0.131089
(The Greek Pizza)	(The Four Cheese Pizza)	0.085418	0.114965	0.011128	0.130279	1.133197	0.001308	1.017607	0.128519
(The Pepper Salami Pizza)	(The Italian Supreme Pizza)	0.087030	0.112049	0.010975	0.126102	1.125420	0.001223	1.016081	0.122066
(The Big Meat Pizza)	(The Sicilian Pizza)	0.114505	0.113507	0.014582	0.127346	1.121918	0.001585	1.015858	0.122721
(The Sicilian Pizza)	(The Big Meat Pizza)	0.113507	0.114505	0.014582	0.126465	1.121918	0.001585	1.016018	0.122583
(The Italian Capocollo Pizza)	(The Sicilian Pizza)	0.088642	0.113507	0.011205	0.126407	1.113646	0.001143	1.014766	0.111974
(The Sicilian Pizza)	(The Spicy Italian Pizza)	0.113507	0.112817	0.014121	0.124408	1.102749	0.001316	1.013239	0.105106
(The Spicy Italian Pizza)	(The Sicilian Pizza)	0.112817	0.113507	0.014121	0.125170	1.102749	0.001316	1.013331	0.105024
(The Spinach and Feta Pizza)	(The Pepperoni Pizza)	0.089025	0.146508	0.014351	0.161207	1.100328	0.001309	1.017524	0.100091
(The Mexicana Pizza)	(The Italian Supreme Pizza)	0.091481	0.112049	0.011205	0.122483	1.093121	0.000955	1.011890	0.093766
(The Italian Supreme Pizza)	(The Mexicana Pizza)	0.112049	0.091481	0.011205	0.100000	1.093121	0.000955	1.009465	0.095938
(The Southwest Chicken Pizza)	(The Spicy Italian Pizza)	0.115196	0.112817	0.014198	0.123251	1.092492	0.001202	1.011901	0.095684

Pizza Bundling

Using min_support =
0.02
(First 30)

Find Pizza Bundling for each
recommendation with lift > 1

(The Spicy Italian Pizza)	(The Southwest Chicken Pizza)	0.112817	0.115196	0.014198	0.125850	1.092492	0.001202	1.012189	0.095427
(The Pepper Salmi Pizza)	(The Sicilian Pizza)	0.087030	0.113507	0.010744	0.123457	1.087655	0.000866	1.011351	0.088273
(The Spinach and Feta Pizza)	(The Thai Chicken Pizza)	0.089025	0.141136	0.013661	0.153448	1.087238	0.001096	1.014544	0.088080
(The Vegetables + Vegetables Pizza)	(The Four Cheese Pizza)	0.092325	0.114965	0.011512	0.124688	1.084572	0.000898	1.011108	0.085909
(The Four Cheese Pizza)	(The Vegetables + Vegetables Pizza)	0.114965	0.092325	0.011512	0.100134	1.084572	0.000898	1.008677	0.088106
(The Napolitana Pizza)	(The Italian Supreme Pizza)	0.089870	0.112049	0.010821	0.120410	1.074617	0.000751	1.009505	0.076292
(The Italian Capocollo Pizza)	(The Big Meat Pizza)	0.088642	0.114505	0.010898	0.122944	1.073698	0.000748	1.009622	0.075315
(The Napolitana Pizza)	(The California Chicken Pizza)	0.089870	0.138450	0.013354	0.148591	1.073248	0.000911	1.011911	0.074988
(The Four Cheese Pizza)	(The Italian Supreme Pizza)	0.114965	0.112049	0.013814	0.120160	1.072389	0.000932	1.009219	0.076271
(The Italian Supreme Pizza)	(The Four Cheese Pizza)	0.112049	0.114965	0.013814	0.123288	1.072389	0.000932	1.009493	0.076020
(The Pepperoni Pizza)	(The Four Cheese Pizza)	0.146508	0.114965	0.018035	0.123101	1.070766	0.001192	1.009278	0.077434
(The Four Cheese Pizza)	(The Pepperoni Pizza)	0.114965	0.146508	0.018035	0.156876	1.070766	0.001192	1.012297	0.074674
(The Five Cheese Pizza)	(The Thai Chicken Pizza)	0.085649	0.141136	0.012893	0.150538	1.066615	0.000805	1.011068	0.068305
(The Prosciutto and Arugula Pizza)	(The Italian Supreme Pizza)	0.088642	0.112049	0.010514	0.118615	1.058596	0.000582	1.007449	0.060736
(The Thai Chicken Pizza)	(The Big Meat Pizza)	0.141136	0.114505	0.017038	0.120718	1.054258	0.000677	1.007066	0.059923

Pizza Bundling

Using min_support =
0.05
(First 30)

Find Pizza Bundling for each
recommendation with lift > 1

antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage	conviction	zhangs_metric
(The Italian Vegetables Pizza)	(The Pepperoni, Mushroom, and Peppers Pizza)	0.060860	0.082732	0.006754	0.110971	1.341328	0.001719	1.031764	0.270961
(The Mediterranean Pizza)	(The Greek Pizza)	0.058250	0.085418	0.006293	0.108037	1.264798	0.001318	1.025358	0.222310
(The Italian Vegetables Pizza)	(The Four Cheese Pizza)	0.060860	0.114965	0.008519	0.139975	1.217538	0.001522	1.029080	0.190249
(The Spinach Supreme Pizza)	(The Sicilian Pizza)	0.058557	0.113507	0.008058	0.137615	1.212386	0.001412	1.027954	0.186076
(The Chicken Pesto Pizza)	(The Vegetables + Vegetables Pizza)	0.061781	0.092325	0.006907	0.111801	1.210948	0.001203	1.021927	0.185671
(The Italian Vegetables Pizza)	(The Spinach and Feta Pizza)	0.060860	0.089025	0.006370	0.104666	1.175686	0.000952	1.017469	0.159116
(The Brie Carre Pizza)	(The Barbecue Chicken Pizza)	0.030698	0.142671	0.005142	0.167500	1.174032	0.000762	1.029825	0.152929
(The Italian Vegetables Pizza)	(The Big Meat Pizza)	0.060860	0.114505	0.008135	0.133670	1.167369	0.001166	1.022122	0.152664
(The Hawaiian Pizza)	(The Mexicana Pizza)	0.140752	0.091481	0.014812	0.105234	1.150340	0.001936	1.015371	0.152100
(The Mexicana Pizza)	(The Hawaiian Pizza)	0.091481	0.140752	0.014812	0.161913	1.150340	0.001936	1.025249	0.143851
(The Chicken Alfredo Pizza)	(The Mexicana Pizza)	0.060399	0.091481	0.006293	0.104193	1.138957	0.000768	1.014190	0.129846
(The Italian Vegetables Pizza)	(The Italian Capocollo Pizza)	0.060860	0.088642	0.006140	0.100883	1.138097	0.000745	1.013615	0.129203
(The Vegetables + Vegetables Pizza)	(The Italian Supreme Pizza)	0.092325	0.112049	0.011742	0.127182	1.135056	0.001397	1.017338	0.131089
(The Italian Supreme Pizza)	(The Vegetables + Vegetables Pizza)	0.112049	0.092325	0.011742	0.104795	1.135056	0.001397	1.013929	0.134001
(The Greek Pizza)	(The Four Cheese Pizza)	0.085418	0.114965	0.011128	0.130279	1.133197	0.001308	1.017607	0.128519

Pizza Bundling

Using min_support =
0.05
(First 30)

Find Pizza Bundling for each
recommendation with lift > 1

(The Chicken Alfredo Pizza)	(The Vegetables + Vegetables Pizza)	0.060399	0.092325	0.006293	0.104193	1.128542	0.000717	1.013248	0.121223
(The Mediterranean Pizza)	(The Vegetables + Vegetables Pizza)	0.058250	0.092325	0.006063	0.104084	1.127364	0.000685	1.013125	0.119963
(The Pepper Salami Pizza)	(The Italian Supreme Pizza)	0.087030	0.112049	0.010975	0.126102	1.125420	0.001223	1.016081	0.122066
(The Sicilian Pizza)	(The Big Meat Pizza)	0.113507	0.114505	0.014582	0.128465	1.121918	0.001585	1.016018	0.122583
(The Big Meat Pizza)	(The Sicilian Pizza)	0.114505	0.113507	0.014582	0.127346	1.121918	0.001585	1.015858	0.122721
(The Green Garden Pizza)	(The Spicy Italian Pizza)	0.062164	0.112817	0.007828	0.125926	1.116201	0.000815	1.014998	0.111004
(The Italian Capocollo Pizza)	(The Sicilian Pizza)	0.088642	0.113507	0.011205	0.126407	1.113646	0.001143	1.014766	0.111974
(The Chicken Pesto Pizza)	(The Classic Deluxe Pizza)	0.061781	0.146278	0.009977	0.161491	1.104000	0.000940	1.018143	0.100406
(The Sicilian Pizza)	(The Spicy Italian Pizza)	0.113507	0.112817	0.014121	0.124408	1.102749	0.001316	1.013239	0.105106
(The Spicy Italian Pizza)	(The Sicilian Pizza)	0.112817	0.113507	0.014121	0.125170	1.102749	0.001316	1.013331	0.105024
(The Spinach and Feta Pizza)	(The Pepperoni Pizza)	0.089025	0.146508	0.014351	0.161207	1.100328	0.001309	1.017524	0.100091
(The Greek Pizza)	(The Mexicana Pizza)	0.085418	0.091481	0.008596	0.100629	1.099996	0.000781	1.010171	0.099396
(The Chicken Alfredo Pizza)	(The Four Cheese Pizza)	0.060399	0.114965	0.007598	0.125794	1.094191	0.000654	1.012387	0.091616
(The Mexicana Pizza)	(The Italian Supreme Pizza)	0.091481	0.112049	0.011205	0.122483	1.093121	0.000955	1.011890	0.093766
(The Italian Supreme Pizza)	(The Mexicana Pizza)	0.112049	0.091481	0.011205	0.100000	1.093121	0.000955	1.009465	0.095938

Pizza Bundling (Top)

Find the Pizza that only in **Top** based on **quantity sold**

antecedents	consequents	support	confidence	lift
(The Hawaiian Pizza)	(The Thai Chicken Pizza)	0.020721	0.147219	1.043103
(The Thai Chicken Pizza)	(The Hawaiian Pizza)	0.020721	0.146819	1.043103
(The Barbecue Chicken Pizza)	(The Pepperoni Pizza)	0.020645	0.144701	0.987669
(The Pepperoni Pizza)	(The Barbecue Chicken Pizza)	0.020645	0.140911	0.987669

Using min_support =
0.01

Choose (The Hawaiian Pizza) -> (The Thai Chicken Pizza) only
because the lift is above 1

antecedents	consequents	support	confidence	lift
(The Big Meat Pizza)	(The Sicilian Pizza)	0.113507	0.014582	0.127346
(The Sicilian Pizza)	(The Big Meat Pizza)	0.114505	0.014582	0.128465

Using min_support =
0.02

antecedents	consequents	support	confidence	lift
(The Thai Chicken Pizza)	(The Big Meat Pizza)	0.017038	0.120718	1.054258

Pizza Bundling (Top/Mid or Mid/Mid)

Find the Pizza that only in **Top/Mid** or **Mid/Mid** based on **quantity sold**

antecedents	consequents	support	confidence	lift
(The Mexicana Pizza)	(The Hawaiian Pizza)	0.014812	0.161913	1.150340
(The Vegetables + Vegetables Pizza)	(The Italian Supreme Pizza)	0.011742	0.127182	1.135056
(The Greek Pizza)	(The Four Cheese Pizza)	0.011128	0.130279	1.133197

Using min_support =
0.02

Pizza Bundling (Top/Less or Mid/Less)

Find the Pizza that only in **Top/Less** or **Mid/Less** based on **quantity sold**

antecedents	consequents	support	confidence	lift
(The Brie Carre Pizza)	(The Barbecue Chicken Pizza)	0.005142	0.167500	1.174032
(The Italian Vegetables Pizza)	(The Four Cheese Pizza)	0.008519	0.139975	1.217538
(The Chicken Pesto Pizza)	(The Classic Deluxe Pizza)	0.009977	0.161491	1.104000

Using min_support =
0.05

Link

[Google Collab](#)

[Power BI](#)



Thank You