Sales performance analysis

Restaurant chain

Analyzed the YoY growth of key sales parameters such as sales, traffic, customer acquisition rate, repeat customer frequency and average order values to identify the regions that experienced a significant decline in sales and high-level factors that were driving this decline

Restaurant chain company needs sales performance analysis

<ANALYSIS / PROJECT TITLE>

Picture this...

You're looking to analyze the factors driving the decline, understand the linkages with customer behavior and experience and subsequently design marketing campaigns to improve the sales in the region. Currently, you are witnessing a sustained drop in sales in one of its primary regions. Hence, there is an opportunity to diagnose the reasons behind the drop in sales and devise an appropriate plan to reverse the trend

You turn to Accordion.

We partner with your team to understand the significant decline in sales in one of the primary regions and diagnose the reasons behind the same and design action items to reverse the trend including:

1) Analyzing the YoY growth of key sales parameters such as sales, traffic, customer acquisition rate, repeat customer frequency and average order values to identify the regions that experienced a significant decline in sales and high-level factors that were driving this decline.
2) Evaluating price sensitivity, product-mix changes and impact of cannibalization on sales to isolate the impact of price change events and new store openings
3) Analyzing the in-house customer feedback and web reviews from Google, Yelp and OpenTable using text analytics to identify attributes that were correlated with declining sales and identified a relatively lower ratings against portion and value in the affected regions.
4) Identifying critical menu items and categories that had low ratings and designing marketing campaigns to improve the customer experience and there by drive increase in traffic & sales
5) Creating a cloud-based Power BI dashboard to track the impact of campaigns on customer experience and sales

Your value is enhanced.

You have understood the customer behavior & sensitivities and correlate those with decline in sales/traffic and enabled them to design & launch suitable marketing campaigns which resulted in nearly 8% increase in top ratings share and a positive 2% YoY growth in sales in Q4 as well as marketing campaigns resulting in upward trend in customer feedback and sales. You have appropriate pricing & portion size enhancement were made to the menus for the items and item groups that were driving lower customer experience. You have Power BI based scorecard provided visibility into the impact of the marketing campaigns.
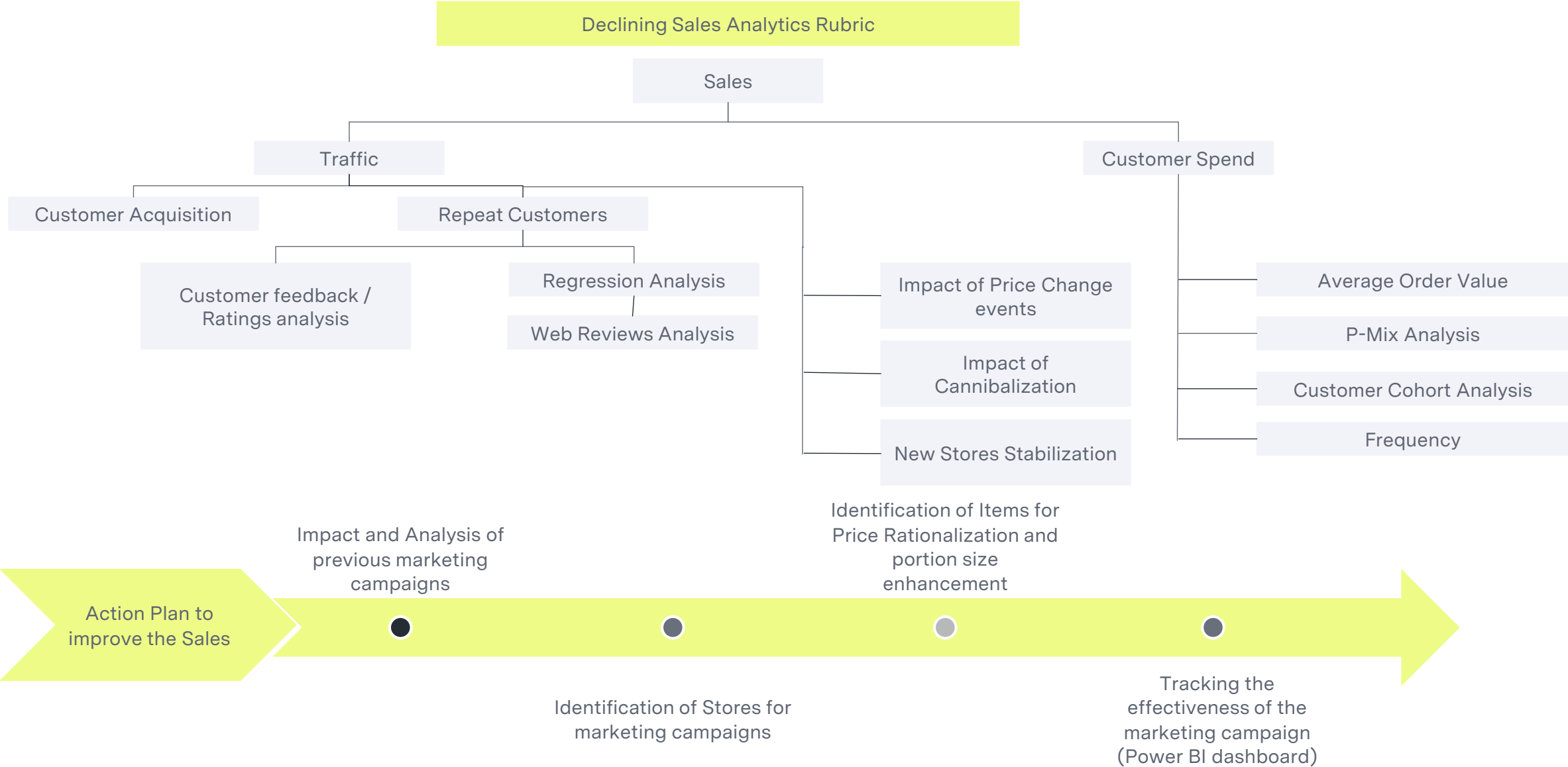
KEY RESULT
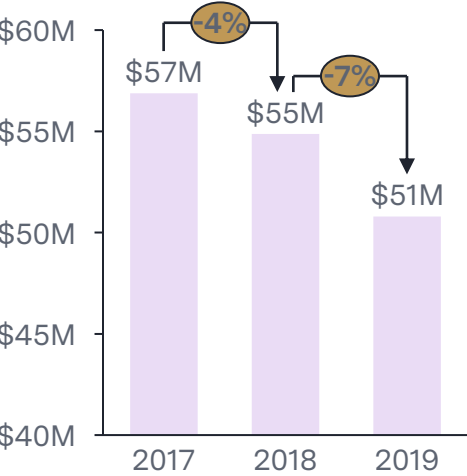
- ~8% increase in top ratings share

VALUE LEVERS PULLED

- Sales performance
- Power BI dashboard
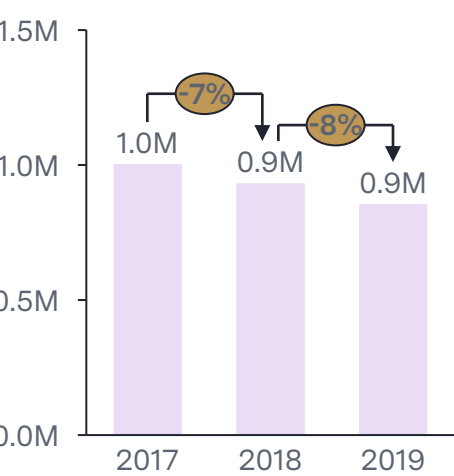
Approach & methodology

Declining Sales Analytics Rubric

Sales

Traffic

Customer Spend

Customer Acquisition

Repeat Customers

Customer feedback / Ratings analysis

Regression Analysis

Web Reviews Analysis

Impact of Price Change events

Impact of Cannibalization

New Stores Stabilization

Average Order Value

P-Mix Analysis

Customer Cohort Analysis

Frequency

Identification of Items for Price Rationalization and portion size enhancement

Action Plan to improve the Sales

Impact and Analysis of previous marketing campaigns

Identification of Stores for marketing campaigns

Tracking the effectiveness of the marketing campaign (Power BI dashboard)

Sales analytics

Net Revenue by Year
$, 2017-2019

- $57M (2017)
- $55M (2018) — -4%
- $51M (2019) — -7%

Transactions by Year
#, 2017-2019

- 1.0M (2017)
- 0.9M (2018) — -7%
- 0.9M (2019) — -8%

Average Order Value by Year
$, 2017-2019

- $70.6 (2017)
- $69.7 (2018) — -1%
- $68.6 (2019) — -2%
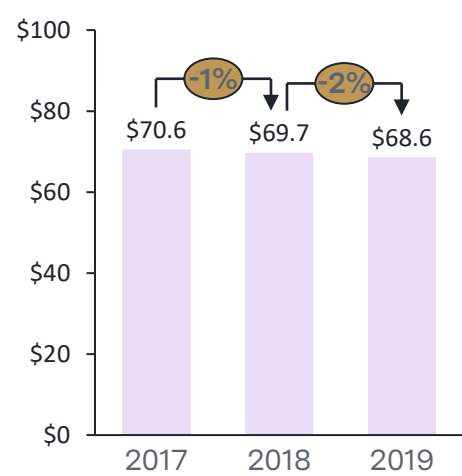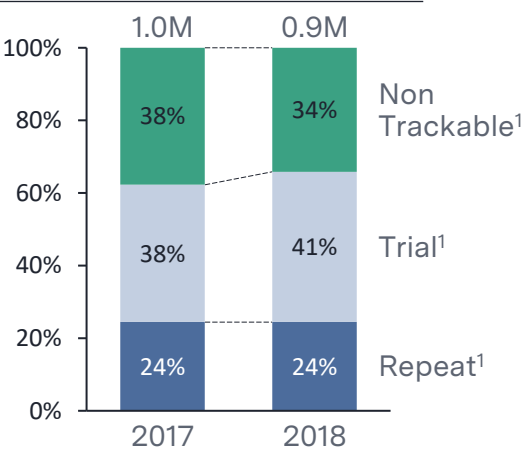
> The decline in sales was driven by a decline in traffic and a marginal decline in average order value.

Customers Acquired by Quarter
#, 2017-2019

Customers Acquired

- 2018Q1: 88K
- 2018Q2: 87K — -10%
- 2018Q3: 99K
- 2018Q4: 119K — -8%
- 2019Q1: 79K — -11%
- 2019Q2: 80K
- 2019Q3: 88K — -10%
- 2019Q4: 107K

Share of transactions by Customers type
#, 2017-2018[3]

	2017 (1.0M)	2018 (0.9M)
Non Trackable[1]	38%	34%
Trial[1]	38%	41%
Repeat[1]	24%	24%
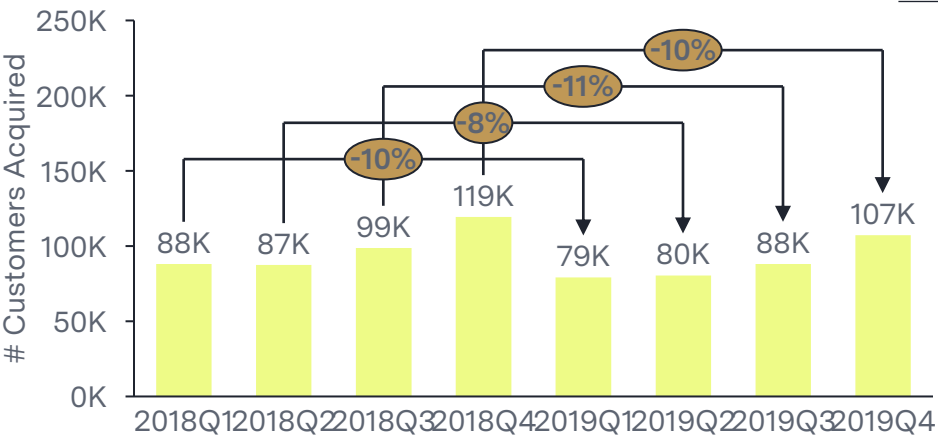
YoY Change in transactions by Customers type
#, 2017-2018

- Non-Trackable[1]: -16%
- Trial[1]: 2%
- Repeat[1]: -7%
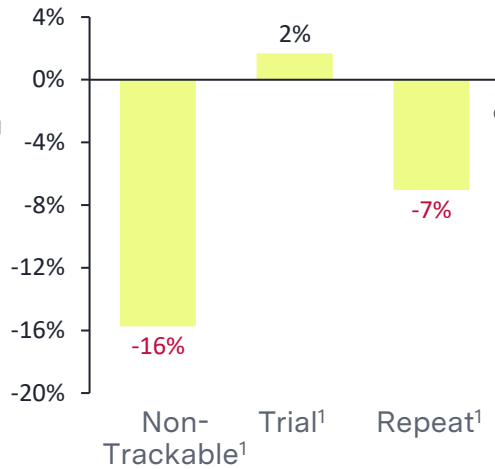
> YoY change in customers acquired & share of transactions by customer type imply that decline in traffic was primarily driven by decline in acquisition of customers and lower conversion rates from trial customers to repeat customers

Factor analysis and testing of hypotheses

Share of sales by Price buckets[1] by customer type for Jan-18 Price change event

	Non-Trackable		Trial		Repeat		
	Pre Jan18	Post Jan18	Pre Jan18	Post Jan18	Pre Jan18	Post Jan18	
$25+	11%	7%	11%	6%	12%	7%	
$20-$25	15%	12%	14%	12%	14%	11%	
$15-$20	16%	20%	19%	19%	17%	20%	
$10-$15	32%	35%	33%	35%	33%	36%	
$5-$10	16%	17%	16%	18%	16%	17%	
$0-$5	10%	9%	8%	10%	9%	9%	
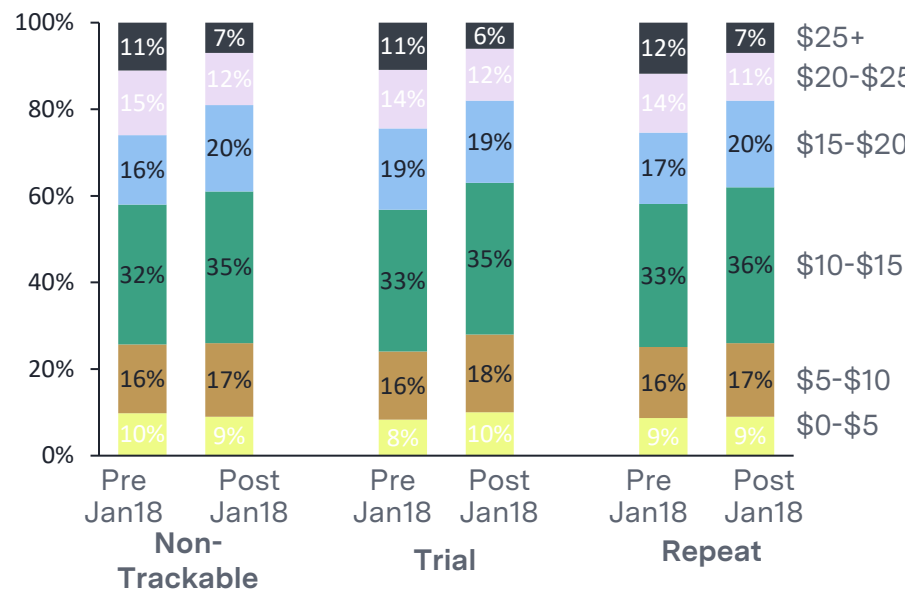
The price change event occurred during Jan'18 made the customers buy cheaper products. This can be observed in the P-Mix distribution where the Share of costlier products (>20$) decreased (by ~7%)

Share of sales by customer type[2], by store[3]
%, 2018-19

	Store-2	Store-3	Store-4
	$8.3M	$9.3M	$7.5M
Shared customer	6%	5%	54%
Loyal Customer	94%	95%	46%
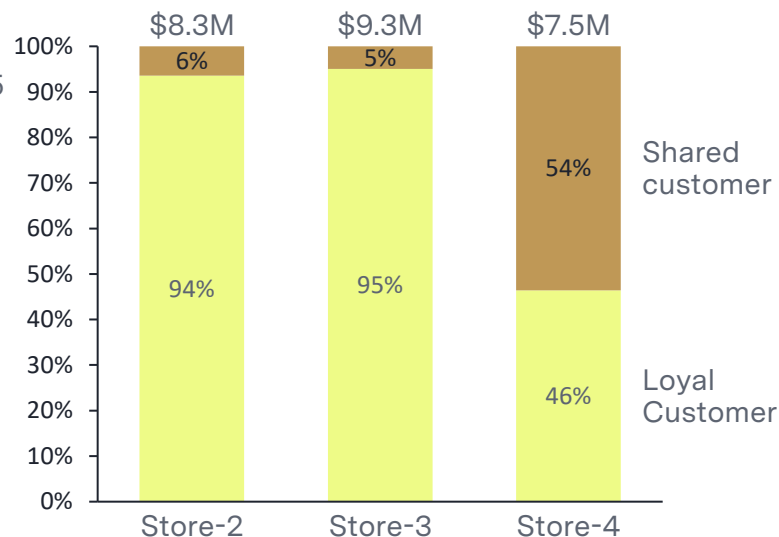
Majority of sales in the newly opened Store-4 are from the customers who also visited other stores, which implies the catchment for store-4 is limited.

Difference in Net sales from steady state sales[4] for newly launched store-4
#,$, 2018-2019

Difference in Net sales from Base Sales

Honeymoon Phase ~ 10 months
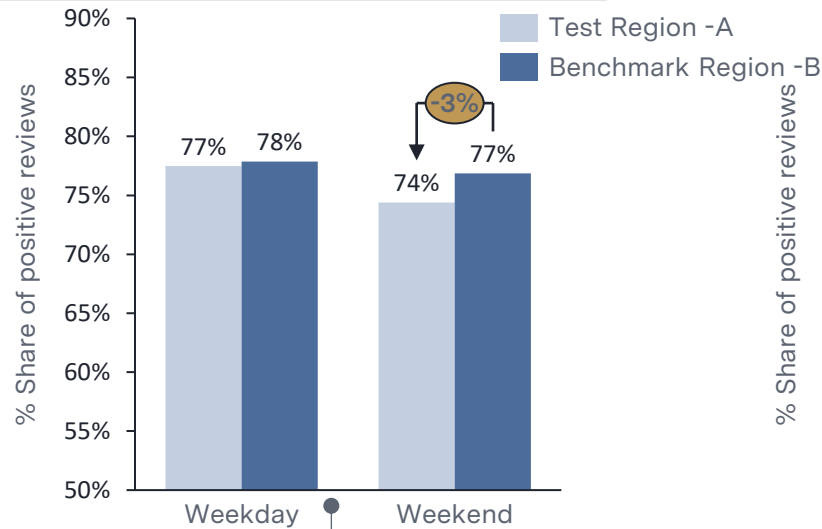
Age of Store (months)

Significant decline in the net sales in H1 2018 for the newly opened store-4, which recently completed its Honeymoon period, was due to high net sales during its "Honeymoon / store ramp-up period".

1. All the items were grouped into different price buckets based on its unit price
2. Loyal customers are those who visit only the same store, while shared customers visit multiple stores
3. Three stores # – 2,3,4 lie within less than 8-mile radius from each other. This analysis is limited to customers who transacted only from these 3 stores
4. Steady state sales are defined as average Net Sales of matured stores (Stores which have been open since at least 4 years)
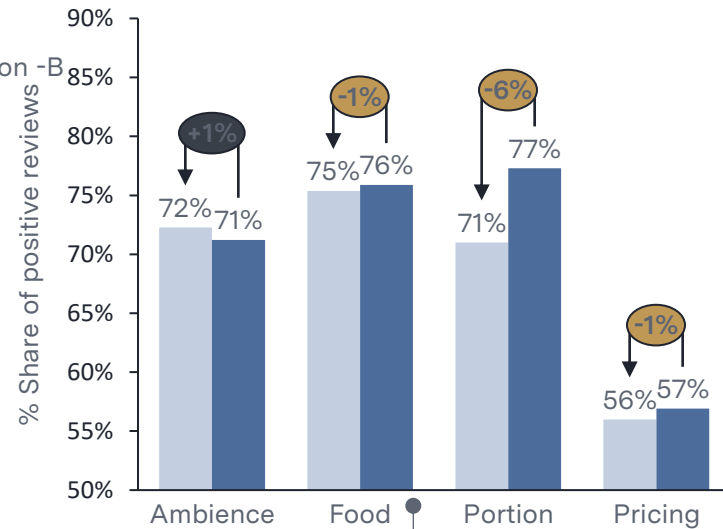
Customer feedback and web reviews analysis

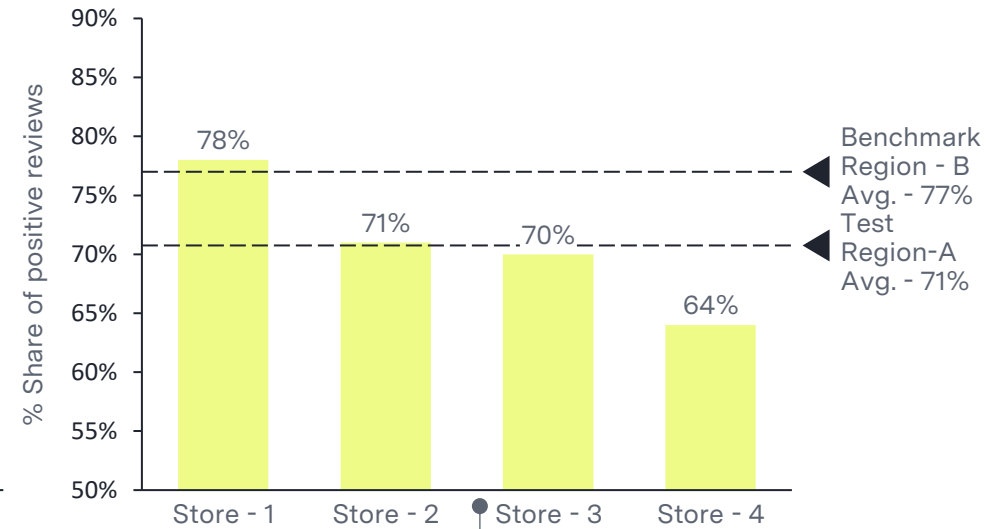**Share of positive reviews[1] by region by day of week**
%, 2018-19

Test Region -A
Benchmark Region -B

% Share of positive reviews

- Weekday: 77% (Test Region -A), 78% (Benchmark Region -B)
- Weekend: 74% (Test Region -A), 77% (Benchmark Region -B), **-3%**

Share of positive reviews[1] by question category
%, 2018-2019

% Share of positive reviews

- Ambience: 72% (A), 71% (B), **+1%**
- Food: 75% (A), 76% (B), **-1%**
- Portion: 71% (A), 77% (B), **-6%**
- Pricing: 56% (A), 57% (B), **-1%**

Share of positive reviews[1] for Portion by Stores
%, 2018-2019

% Share of positive reviews

- Store - 1: 78%
- Store - 2: 71%
- Store - 3: 70%
- Store - 4: 64%

Benchmark Region - B Avg. - 77%
Test Region-A Avg. - 71%

The share of positive reviews for Region-A is lower than the benchmark region during the Peak traffic hours (Dinner and Weekends)

Region - A had a poor customer feedback for 'Portion' question category when compared to Benchmark Region (B)

Most stores in Region-A have lower share of positive reviews than Benchmark Region (B) in the 'Portion' category.

Web reviews[2] analysis: Share of reviews with poor customer ratings by keyword

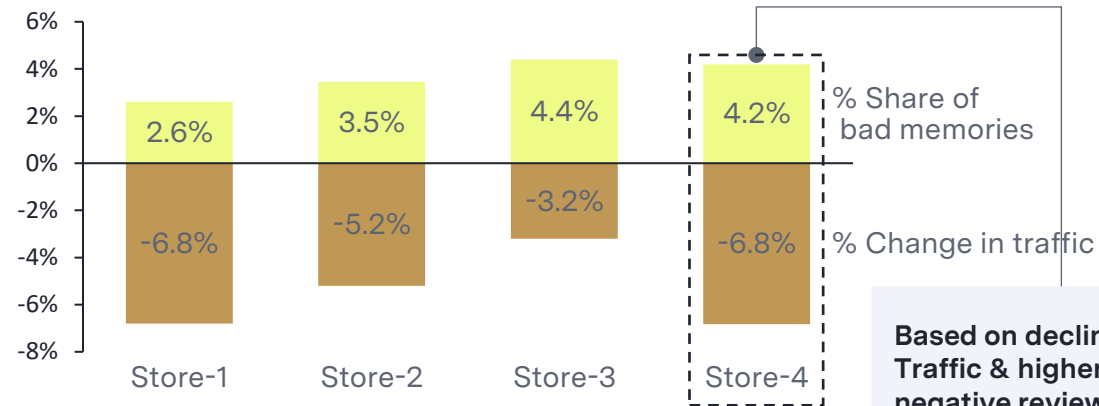| Share of reviews with poor customer feedback						
Item / keyword	Total Reviews for the keyword	Store 1	Store 2	Store 3	Store 4	Avg. Share of negative / bad reviews (1,2 rating)
Item 1	6,706	27%	47%	33%	44%	37%
Portion size	5,047	29%	14%	29%	42%	35%
Reasonable Price	4,480	13%	16%	32%	24%	30%
Item 2	4,088	20%	21%	35%	27%	27%
Item 3	786	8%	14%	13%	8%	11%

NLP based text analytics on Customer reviews from Google, Yelp and Open Table also suggested poor performance of the region on portion aspect

1. All ratings were recorded using in-house system (RAIL) except for web reviews analysis. If a rating lies in the top 2 boxes of the scale, the review is considered as a 'positive' review (for example, on a scale of 5, a rating of 4 or 5 is considered a positive review)
2. For web reviews analysis, the last 1-year reviews were extracted from Google , Yelp and Open Table for all stores in Region A
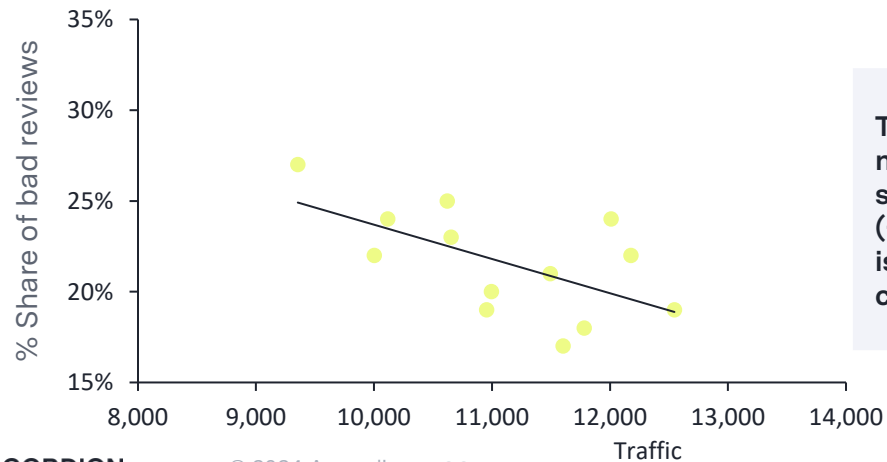
Design of marketing campaigns

% Share of negative reviews (Portion category) and YoY traffic (2018 vs 2019) for Region-A stores

	Store-1	Store-2	Store-3	Store-4
% Share of bad memories	2.6%	3.5%	4.4%	4.2%
% Change in traffic	-6.8%	-5.2%	-3.2%	-6.8%

Based on decline in Traffic & higher share of negative reviews, we recommended to launch 'Portion Enhancement' campaign at Store-4.

% Share of bad memories vs traffic for store-4
Oct'18 to Oct'19

Traffic and Share of negative reviews showed a correlation of (-0.6) for store-4, which is ideal for testing conditions.

Items Identified for implementation of the campaign

| Item list for Portion size enhancement		
Item Name	**Item Class**	**% Share of negative reviews for the item**
Item 1	Fajitas	8.3%
Item 2	NA Beverage	7.5%
Item 3	Margarita	6.1%
Item 4	Fajitas	6.0%
Item 5	Margarita	5.1%
Item 6	Margarita	4.4%
Item 7	Margarita	4.1%
Item 8	Kids	3.6%

- **Identified the items that contribute significantly to negative reviews (>1% checks) and which have notable amount of sales (top 90%ile sales).**
- **Further analyzed co-order rate between them. Co-order rates for Items was low which implied that the reviews given to items were not influenced by other items in the bucket.**

## Co-order[1] rates for the identified items for implementing 'Portion size Enhancement' at store-4
%, 2019

Co-order rate	Secondary Item								Grand Total
Primary Item	**Item-1**	**Item-2**	**Item-3**	**Item-4**	**Item-5**	**Item-6**	**Item-7**	**Item-8**	
Item-1		13.6%	9.2%	16.3%	17.3%	14.2%	7.2%	22.2%	100%
Item-2	12.5%		8.5%	13.1%	17.5%	14.8%	13.8%	19.9%	100%
Item-3	10.6%	10.6%		14.4%	20.4%	11.9%	10.1%	22.1%	100%
Item-4	12.8%	11.2%	9.9%		17.1%	15.3%	13.2%	20.4%	100%
Item-5	11.9%	13.1%	12.2%	14.9%		14.6%	14.0%	19.2%	100%
Item-6	16.3%	18.6%	11.9%	22.3%	24.3%		2.4%	4.0%	100%
Item-7	10.0%	20.7%	12.1%	23.1%	28.1%	2.9%		3.1%	100%
Item-8	18.1%	17.7%	15.7%	21.1%	22.8%	2.8%	1.8%		100%
Grand Total	**11.8%**	**12.8%**	**10.2%**	**14.9%**	**17.1%**	**10.2%**	**8.5%**	**14.4%**	**100%**

Power BI dashboard to track campaign effectiveness

Snapshots of the Power BI dashboard tracking customer feedback (internal), sales metrics, traffic, PPA & checks on a real time basis
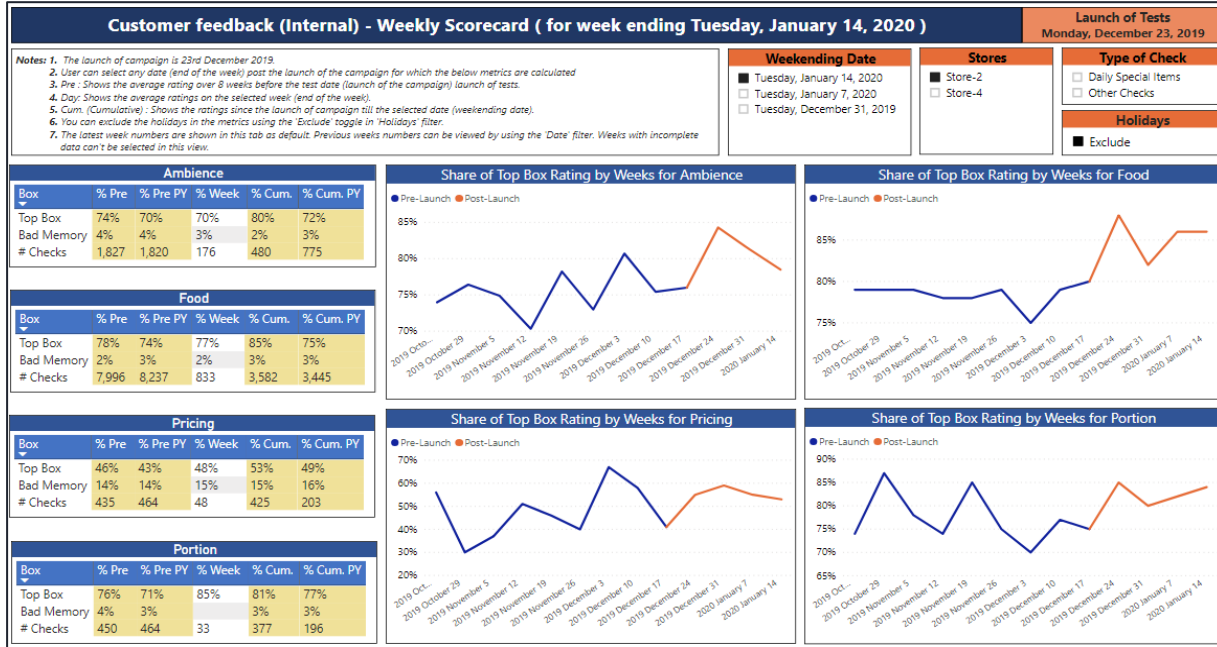
Customer feedback top box rating share for portion increased significantly post the launch of marketing campaign
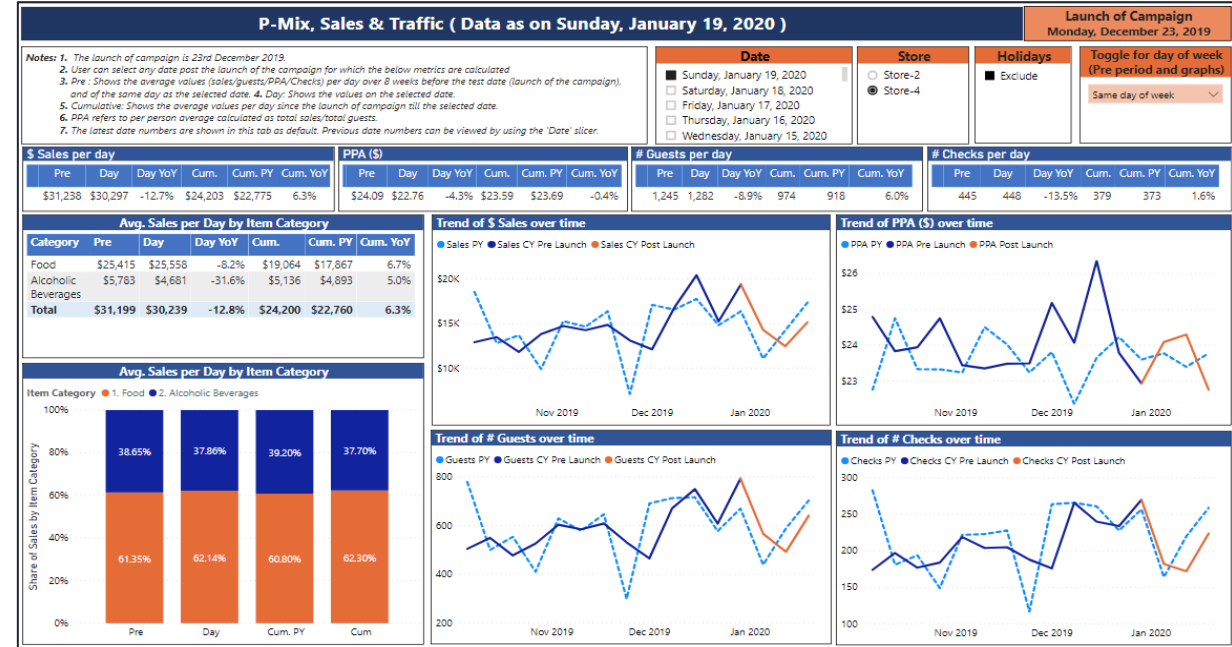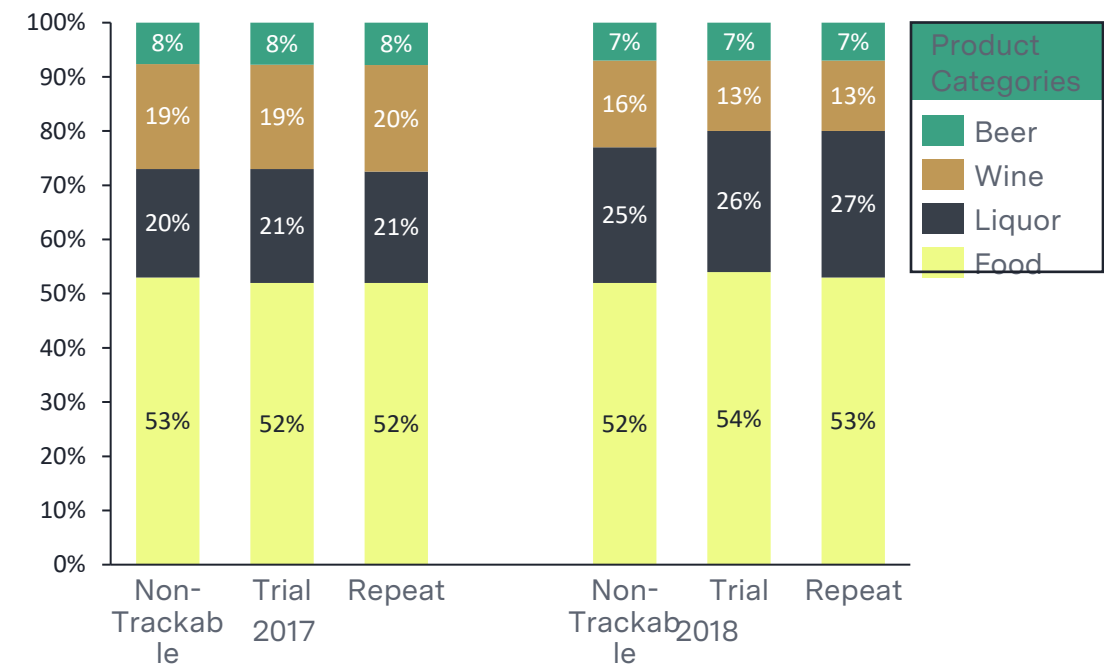
The campaign resulted in an increase of 3% in sales post the launch, which was declining at 7% during 2018-19
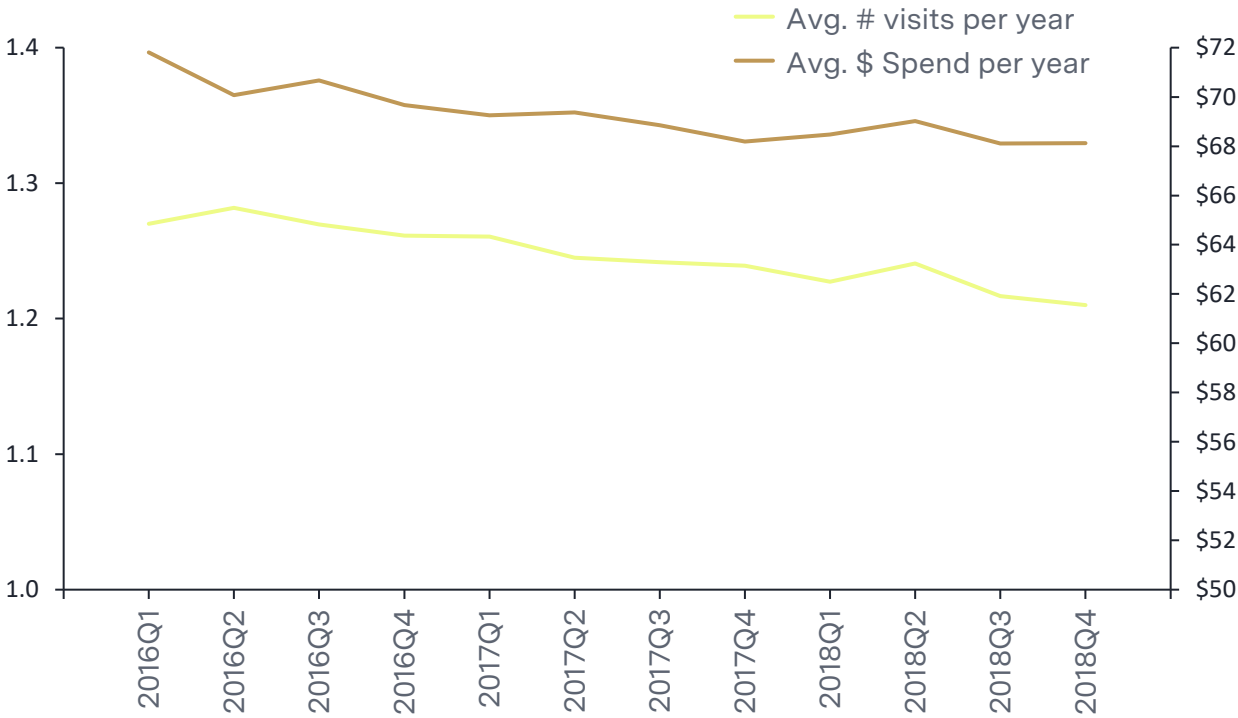
Customer behavioral trends

Product mix of Sales, by Customer type[1], by Year
%, 2017-2018

Avg. visits and Avg. $ Spend per customer (1 Year), by Acquisi...
#,$, 2017-2018

Product Categories
- Beer
- Wine
- Liquor
- Food

Left chart (stacked bars):

2017:
	Non-Trackable	Trial	Repeat
Beer	8%	8%	8%
Wine	19%	19%	20%
Liquor	20%	21%	21%
Food	53%	52%	52%

2018:
	Non-Trackable	Trial	Repeat
Beer	7%	7%	7%
Wine	16%	13%	13%
Liquor	25%	26%	27%
Food	52%	54%	53%

Right chart:
- Avg. # visits per year
- Avg. $ Spend per year

Quarters: 2016Q1, 2016Q2, 2016Q3, 2016Q4, 2017Q1, 2017Q2, 2017Q3, 2017Q4, 2018Q1, 2018Q2, 2018Q3, 2018Q4

Share of Sales for 'Wine' category decreased in 2018, which resulted in an increase in the share of 'Liquor'

Avg. visits and Avg. spend declined for the newer cohorts. The decline in spend was driven by the change in product mix.
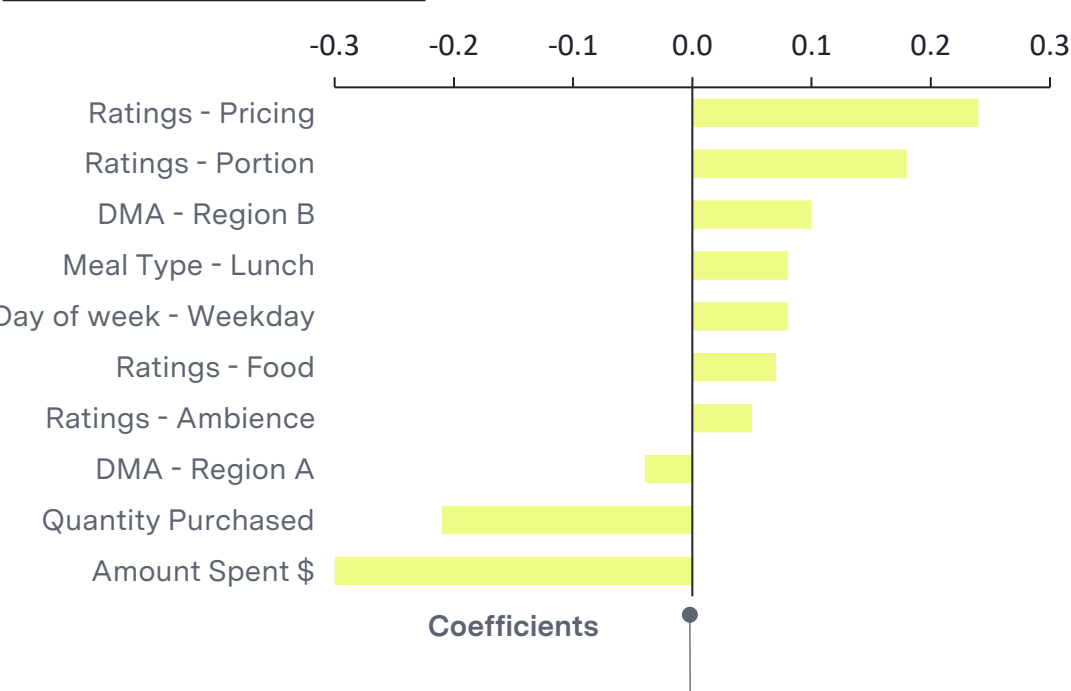
1   Non-Trackable customers are the customers who pay by cash. Trial Customers are defined as the customers having only 1 transaction in 1 year since their acquisition, customers with more than 1 transaction are defined as repeat Customers

Regression analysis on conversion drivers

Regression analysis was done to analyze the drivers/factors for improving customer conversion. The results suggested that improvement on 'Pricing' ar̶ lead to better retention rates of customers across regions. Also, keeping all else same, a customer making their first visit to a Region-A is less likely to b̶
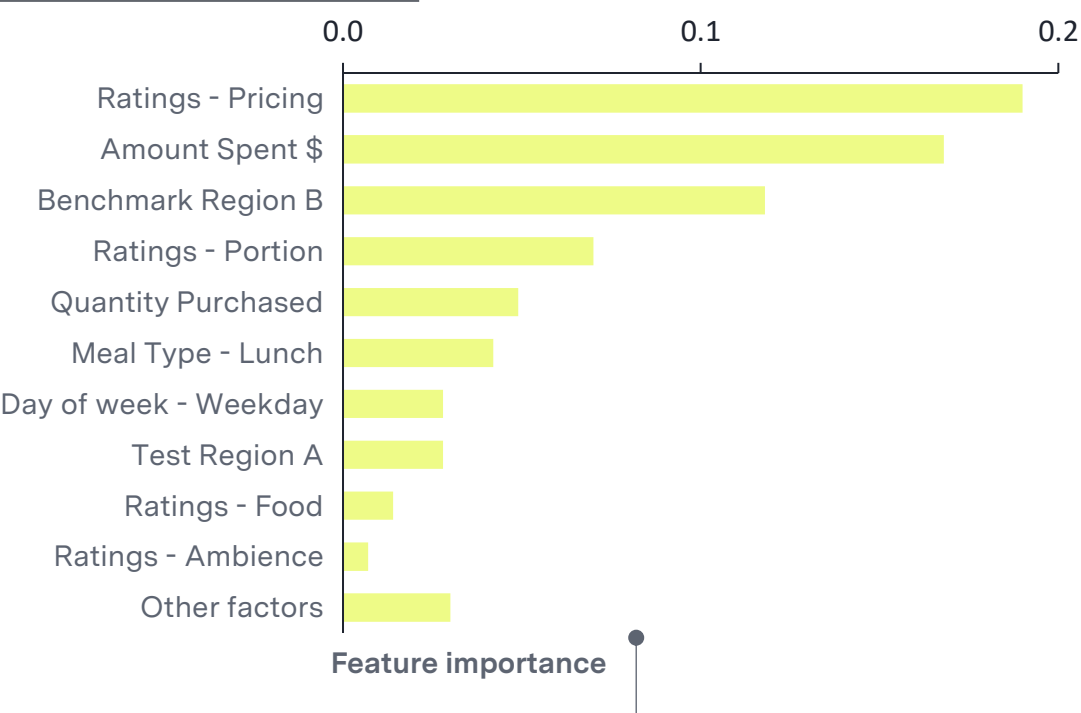
Can be dropped

Coefficients of the factors using Logistic Regression conversion model
,2018-19

Ratings - Pricing
Ratings - Portion
DMA - Region B
Meal Type - Lunch
Day of week - Weekday
Ratings - Food
Ratings - Ambience
DMA - Region A
Quantity Purchased
Amount Spent $

-0.3   -0.2   -0.1   0.0   0.1   0.2   0.3

Coefficients

Feature importance from Random forest-based customer conversion model
,2018-19

Ratings - Pricing
Amount Spent $
Benchmark Region B
Ratings - Portion
Quantity Purchased
Meal Type - Lunch
Day of week - Weekday
Test Region A
Ratings - Food
Ratings - Ambience
Other factors

0.0   0.1   0.2

Feature importance

- There is ~25% and 18% increase in odds of retaining a customer for a percentage point increase in Pricing and Portion categories.
- Higher # of items purchased and $ Spend on customer's first visit.

Positive ratings for Pricing and Portion categories and $ spent during customer's first visit are important factors in determining the customer retention

1   Logistic regression and random forest models were used to train the data (70:30 train to test data split).
2   Positive coefficient implies that a higher value of the factor results in a higher probability of retaining the customer, while a negative coefficient implies that a higher value of the factor results in lower chances of retention
3   Weekdays – Mon-Thu ; Weekends- Fri-Sun
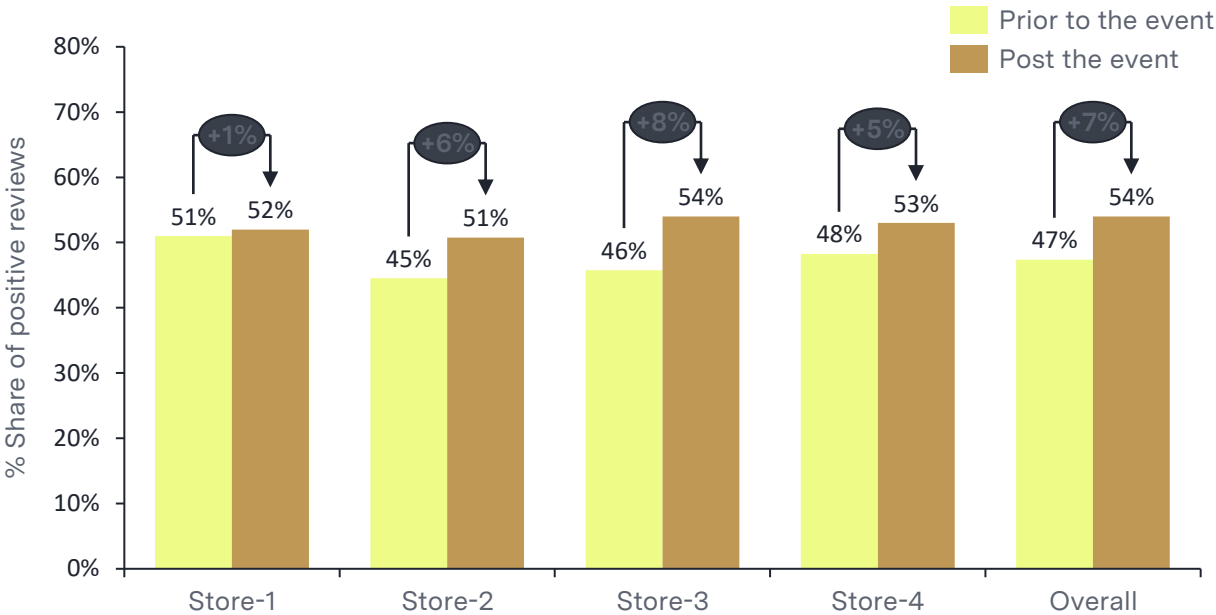
Impact of pizza weekends campaign

Marketing campaign was analyzed to understand the customer response and the resultant improvement in sales.

Change in Sales Prior and post the launch of Pizza Weekends event

Share of positive reviews Prior and post the launch of Pizza Weekends event
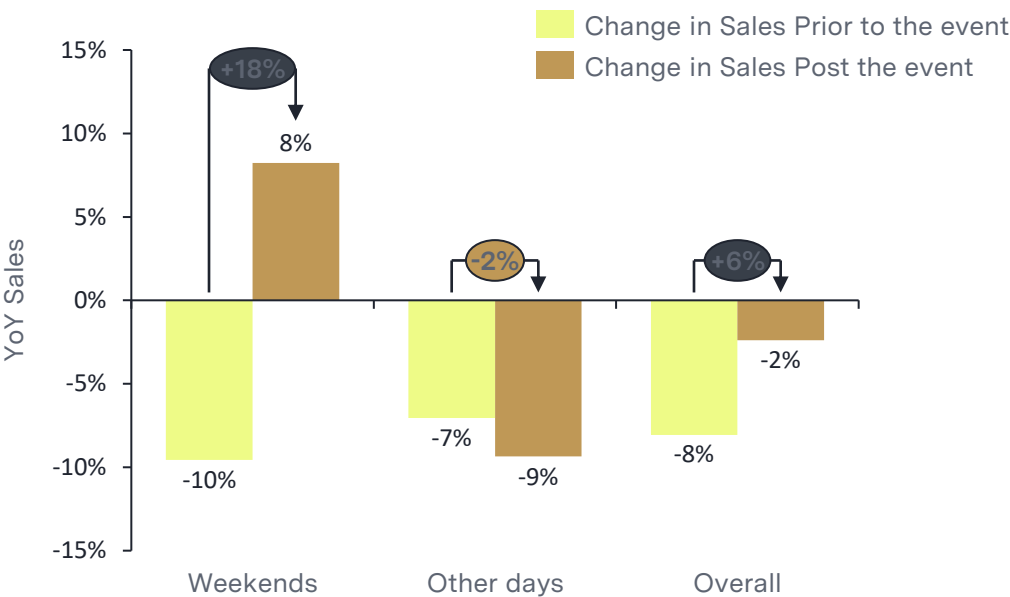
The sales on Weekends saw a growth of ~18% after the launch of Pizza Weekends program. However, the overall sales saw an increase of only ~6% due to cannibalization of sales on other days

All stores saw an increase in the share of positive reviews post the launch of Pizza Weekends campaign.

1   Prior event figures show % change in 90-day sales prior to launch of campaign in 2019 vs sales for same period last year, Post event figures show % change in 90-day sales post launch of campaign in 2019 vs sales for same period last year.

2   All ratings were recorded using an in-house system. If the ratings lies in the top 2 boxes of the scale, the review is considered as a 'positive' review (for example, on a scale of 5, a rating of 4 or 5 is considered as positive).