Café Chain _Market Research Analysis

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Introduction

- The owner of the restaurant wants you to use this data to come up with a set of recommendations that can help his Café Chain increase his revenues. He has not been able to launch a loyalty program and is unable to provide you with a data set that has customer level information. But, he is able to provide you with a data set for POS (point of sale data) for one of his chains.

- **Executive summary** :

❖ Tobacco contributes the highest sales.

❖ Sales are high during the night times compared to day.

❖ Customer purchases tobacco and food items together.

❖ Liquor Sales are high during night.

❖ Food items has a decline during the night where the day shows movement of food items.

❖ Top bills ordered maximum quantity are G0481424, G0518491, G0516596, G0527570

❖ Top paid bills are G0522713, G0481424, G0518491, G0516596,G0527570
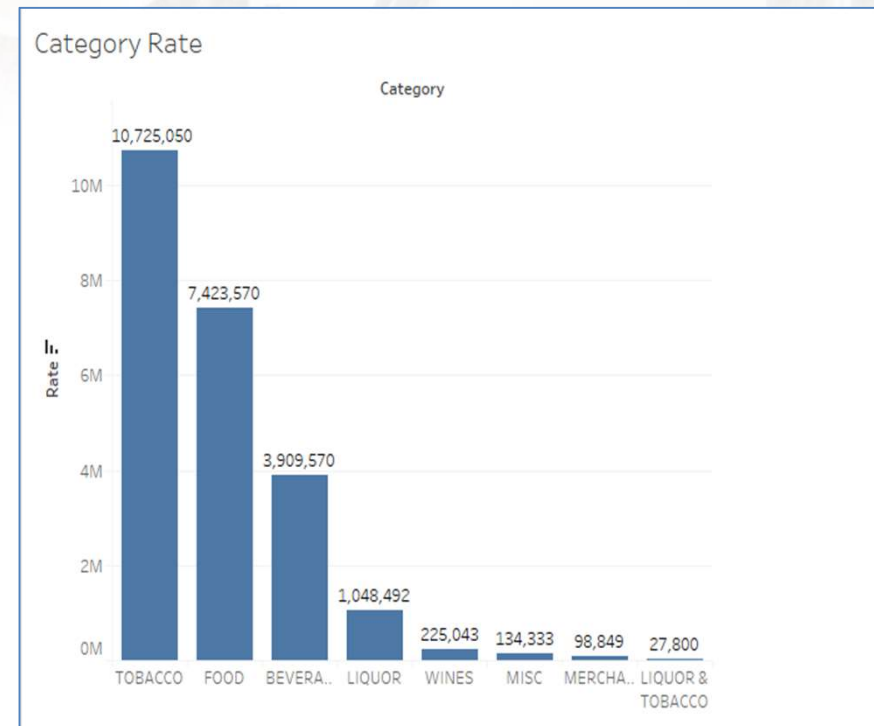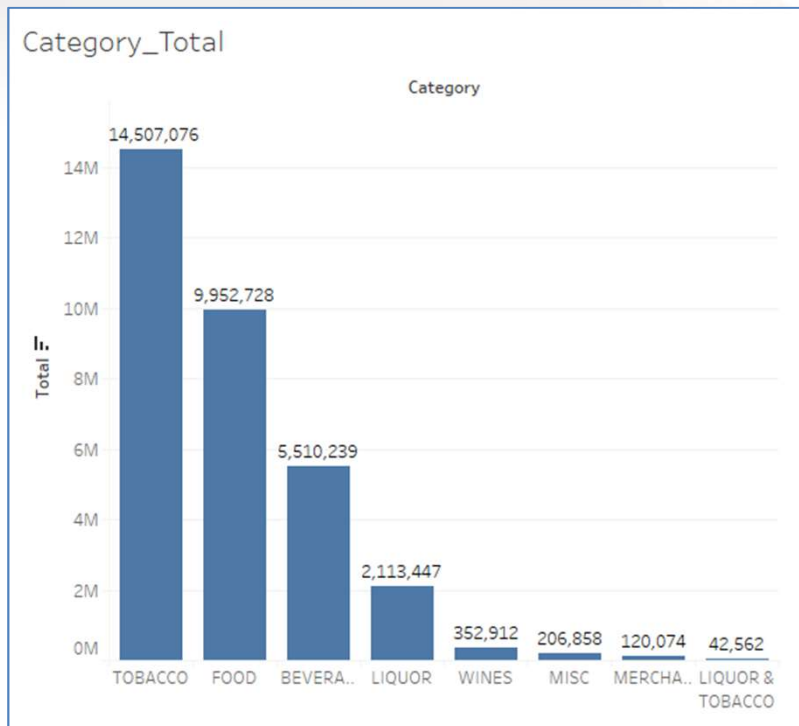
Exploratory Analysis

- The data set consist of 145830 rows and 10 columns.

- Data consist of Date of purchase, Bill number, Item Description, Time, Quantity , Rate, Tax, Discount , Total and Category.

- **Type of Data**:

```
Date             datetime64[ns]
Bill Number              object
Item Desc                object
Time                     object
Quantity                  int64
Rate                    float64
Tax                     float64
Discount                float64
Total                   float64
Category                 object
dtype: object
```

- The data has outliers in terms of Rate, Quantity and Total.
- In terms of Items, Nirvana hookah's single is having outliers.

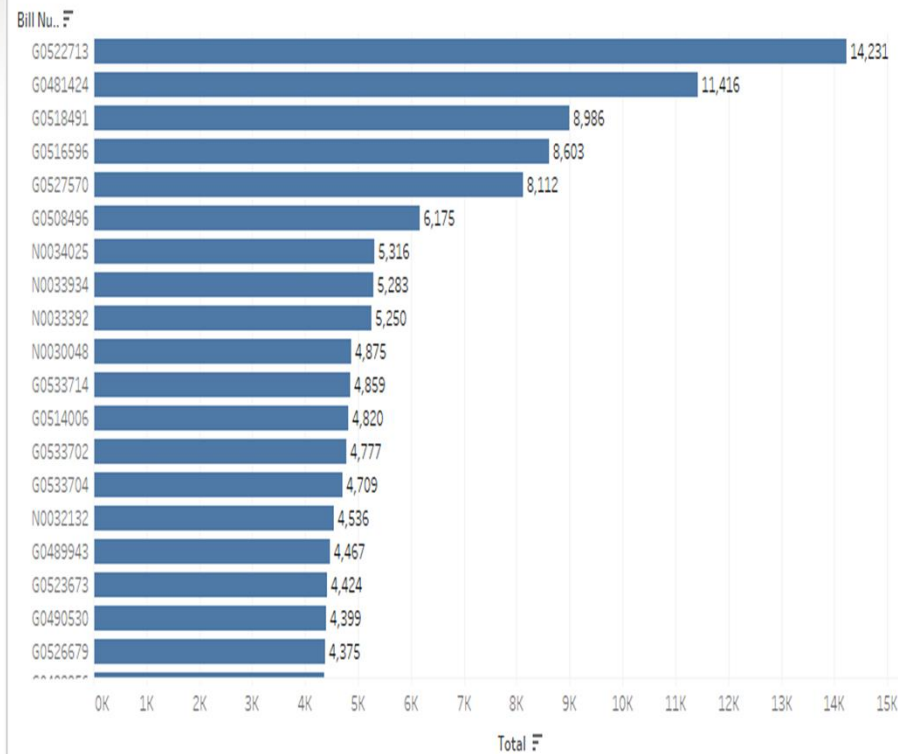# Exploratory Analysis of data & an executive summary

- The dataset has no missing values.
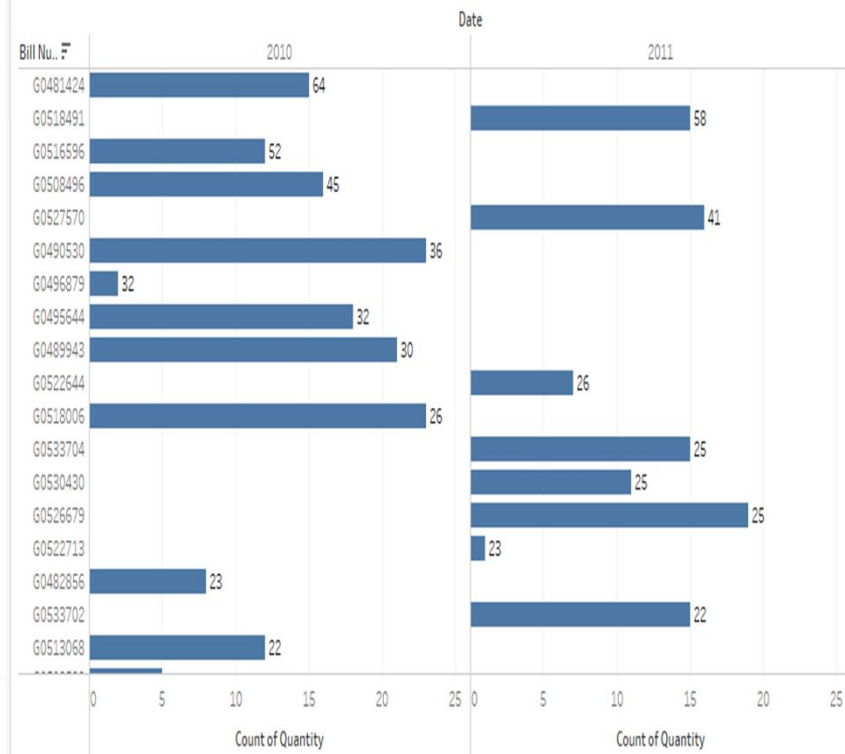- On the basis of Category, Rate and Total of the sales for the Café:

Exploratory Analysis of data & an executive summary

Highest purchases with total and quantity

Exploratory Analysis of data & an executive summary

Most revenue turned items of the café interms of quantity and category

Item Desc	2010	2011
NIRVANA HOOKAH SINGLE	2,119,564	833,571
SAMBUCA	1,832,292	458,766
MINT FLAVOUR SINGLE	1,281,555	558,946
CALCUTTA MINT	1,182,247	458,614
N R G HOOKAH	896,928	296,087
GREAT LAKES SHAKE	632,192	210,930
GREEN APPLE FLAVOUR S..	528,957	264,726
JR.CHL AVALANCHE	568,530	145,036
SILVER APPLE SINGLE	490,274	183,251
POUTINE WITH FRIES	431,821	148,463
ARABIAN MIST	522,522	37,884
CAPPUCCINO	400,230	150,022
CARLSBERG	389,464	149,338
OREO COOKIE SHAKE	299,841	105,804
RED WINE SHEESHA	302,841	99,437
B.M.T. PANINI	285,728	105,339
TUBORG	278,405	102,647
RED BULL 2+1	365,020	13,922
RED BULL ENERGY DRINK	243,386	129,630
KF DRAUGHT PITCHER (2L..	220,991	109,627
KF DRAUGHT (1LTR)	288,008	42,065

Item Desc	
NIRVANA HOOKAH SINGLE	8,686
CAPPUCCINO	7,144
MINT FLAVOUR SINGLE	6,019
GREAT LAKES SHAKE	5,914
SAMBUCA	4,765
POUTINE WITH FRIES	3,741
QUA MINERAL WATER(10..	3,633
JR.CHL AVALANCHE	3,446
CARLSBERG	3,380
CALCUTTA MINT	3,339
B.M.T. PANINI	3,010
MASALA CHAI CUTTING	2,993
TUBORG	2,855
MOROCCAN MINT TEA	2,812
LEMON ICED TEA	2,687
GREEN APPLE FLAVOUR S..	2,590
CAFFE LATTE	2,523
N R G HOOKAH	2,314
RED BULL ENERGY DRINK	2,266
OREO COOKIE SHAKE	2,259

FOOD	62,141
BEVERAGE	50,637
TOBACCO	37,384
LIQUOR	10,284
MISC	1,385
WINES	1,074
MERCHANDISE	551
LIQUOR & TOBACCO	63

What kind of trends do you notice in terms of consumer behaviour over different times of the day and different days of the week? Can you give concrete recommendations based on the same?

Quantity of sales vs Time: 55% of the beverages are sold during the period between 3Pm to 9PM. 50% of the total quantity of food are taken from the café after 9PM. 85% of the liquor consumption are in the early morning hours. Even the wines are also ordered before 3 am.

What kind of trends do you notice in terms of consumer behaviour over different times of the day and different days of the week? Can you give concrete recommendations based on the same?

Quantity ordered Vs Category
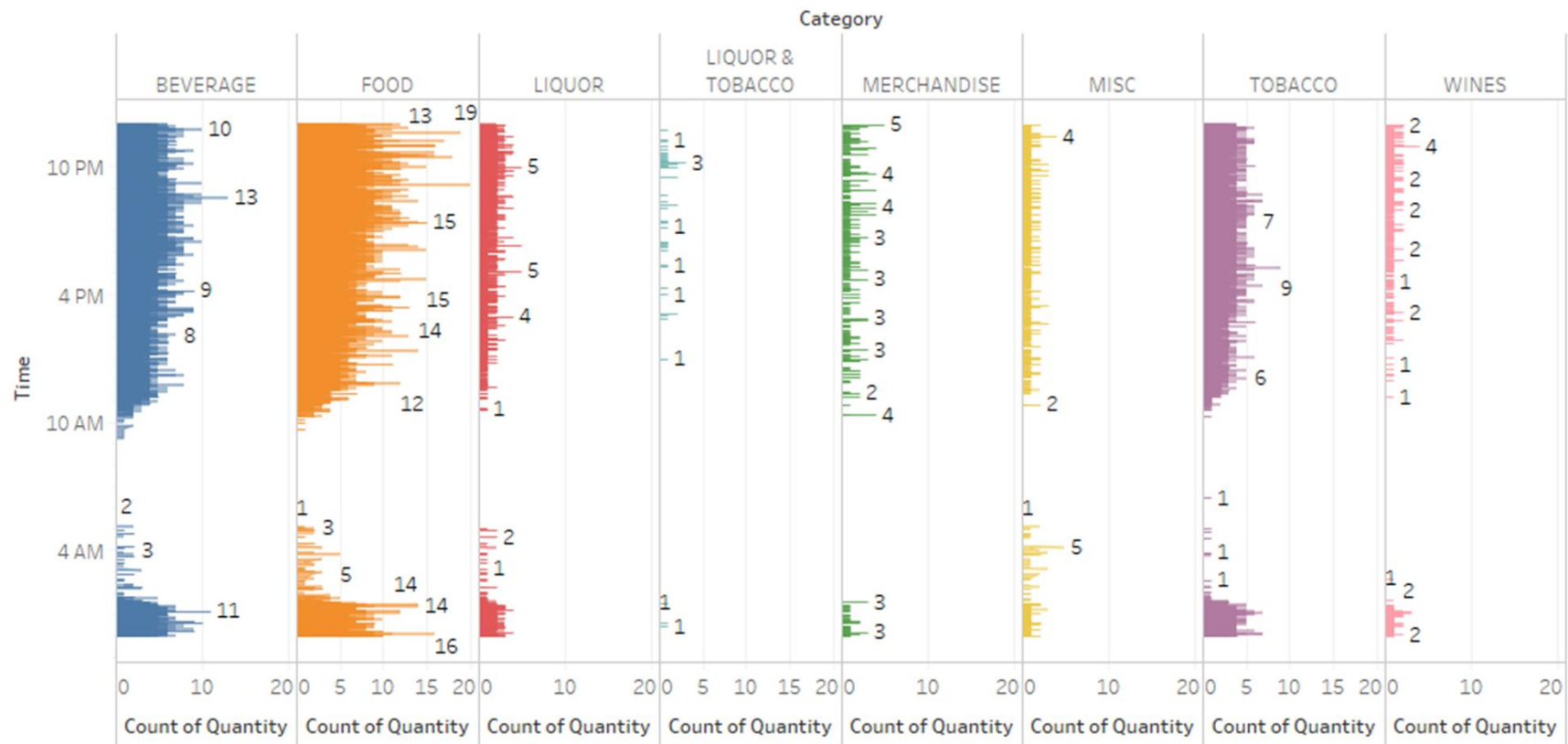
What kind of trends do you notice in terms of consumer behaviour over different times of the day and different days of the week? Can you give concrete recommendations based on the same?

Week Vs Avg Sale

What kind of trends do you notice in terms of consumer behaviour over different times of the day and different days of the week? Can you give concrete recommendations based on the same?
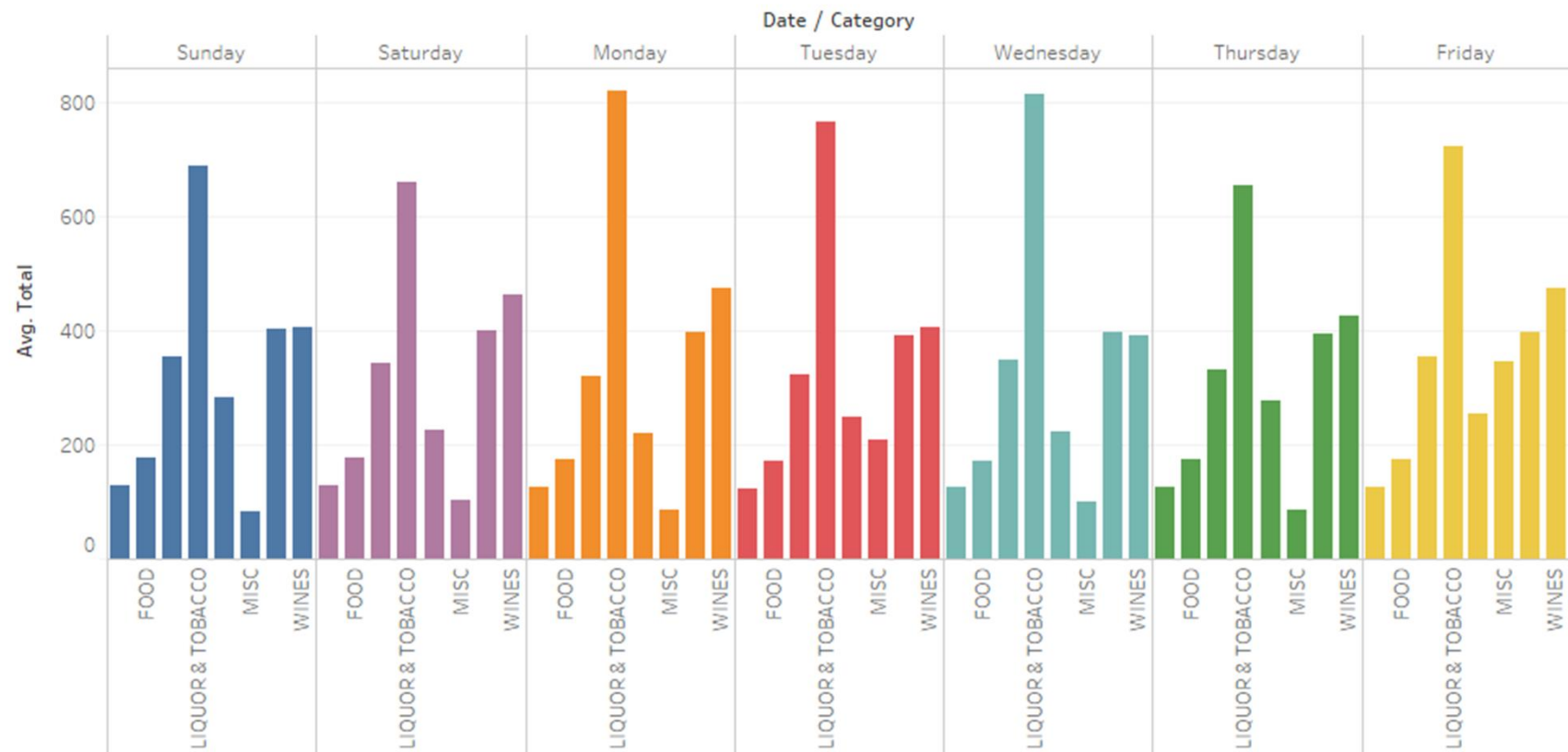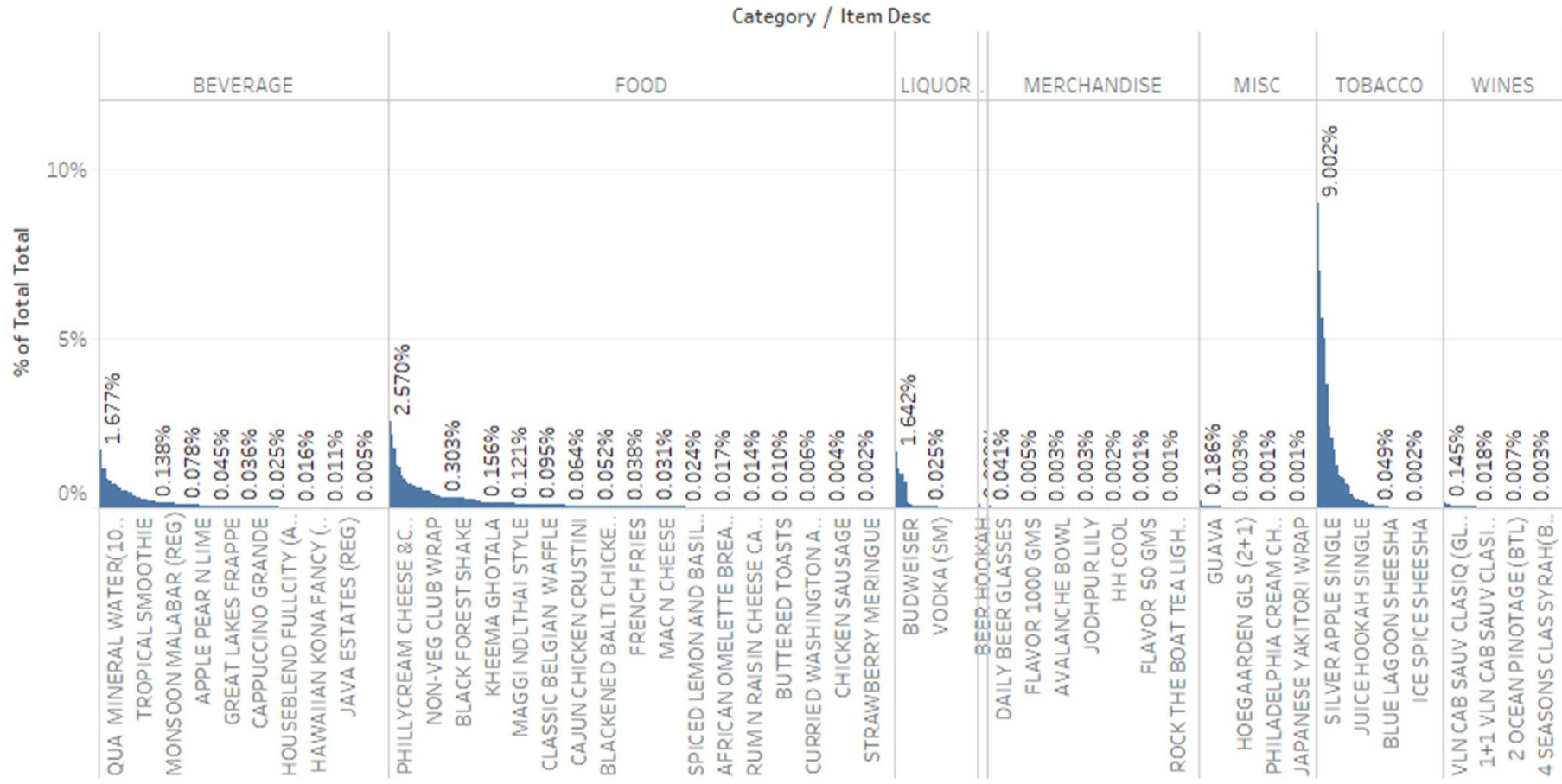
Interpretation of the customer behaviour on the basis of time is as below:

❖ Combination of Liquor and Tobacco orders are high during the week rather than on a holiday.

❖ The favourite brand that goes in a Tobacco is "Nirvana Hookah Single" irrespective of a weekday and a holiday.

❖ The best selling among the liquor is "Sambuca" and "Mint flavour single malt Scotch"

❖ The other products that have movement is "Calcutta Mint", NRG Hookah, Great Lakes Shakes, etc.

❖ **Recommendation**:- Café's peak working hours can be schedules estimate after 4pm till 2 am. Beverages, food and Tobacco combination works well in the specific peak time. Café should introduce combo offers for those who comes for Beverages and food. Tobacco and Beverages can be an add on combo in the café . Special offers can be given for the multinational company employees as they can boost the sales of the café in terms of group gathering. Tobacco and Liquor combination happens to have less movement in that period.

Are there certain menu items that can be taken off the menu?

Top category_item

Category / Item Desc

% of Total Total

BEVERAGE	FOOD	LIQUOR	MERCHANDISE	MISC	TOBACCO	WINES

BEVERAGE
- 1.677% — QUA MINERAL WATER(10..
- 0.138% — TROPICAL SMOOTHIE
- 0.078% — MONSOON MALABAR (REG)
- 0.045% — APPLE PEAR N LIME
- 0.036% — GREAT LAKES FRAPPE
- 0.025% — CAPPUCCINO GRANDE
- 0.016% — HOUSEBLEND FULLCITY (A..
- 0.011% — HAWAIIAN KONA FANCY (..
- 0.005% — JAVA ESTATES (REG)

FOOD
- 2.570% — PHILLYCREAM CHEESE &C..
- 0.303% — NON-VEG CLUB WRAP
- 0.156% — BLACK FOREST SHAKE
- 0.121% — KHEEMA GHOTALA
- 0.095% — MAGGI NDLTHAI STYLE
- 0.064% — CLASSIC BELGIAN WAFFLE
- 0.052% — CAJUN CHICKEN CRUSTINI
- 0.038% — BLACKENED BALTI CHICKE..
- 0.031% — FRENCH FRIES
- 0.024% — MAC N CHEESE
- 0.017% — SPICED LEMON AND BASIL..
- 0.014% — AFRICAN OMELETTE BREA..
- 0.010% — RUMN RAISIN CHEESE CA..
- 0.006% — BUTTERED TOASTS
- 0.004% — CURRIED WASHINGTON A..
- 0.002% — CHICKEN SAUSAGE
- STRAWBERRY MERINGUE

LIQUOR
- 1.642% — BUDWEISER
- 0.025% — VODKA (SM)

MERCHANDISE
- BEER HOOKAH..
- 0.041% — DAILY BEER GLASSES
- 0.005% — FLAVOR 1000 GMS
- 0.003% — AVALANCHE BOWL
- 0.003% — JODHPUR LILY
- 0.002% — HH COOL
- 0.001% — FLAVOR 50 GMS
- 0.001% — ROCK THE BOAT TEA LIGH..

MISC
- 0.186% — GUAVA
- 0.003% — HOEGAARDEN GLS (2+1)
- 0.001% — PHILADELPHIA CREAM CH..
- 0.001% — JAPANESE YAKITORI WRAP

TOBACCO
- 9.002% — SILVER APPLE SINGLE
- 0.049% — JUICE HOOKAH SINGLE
- 0.002% — BLUE LAGOON SHEESHA
- ICE SPICE SHEESHA

WINES
- 0.145% — VLN CAB SAUV CLASIQ (GL..
- 0.018% — 1+1 VLN CAB SAUV CLASI..
- 0.007% — 2 OCEAN PINOTAGE (BTL)
- 0.003% — 4 SEASONS CLAS SYRAH(B..

## Are there certain menu items that can be taken off the menu?

There are certain products that are slow moving in the menu. We can remove those slow moving menu from the café and replace them with fast moving items in the menu with different patters of offers.

The below are the some of the products that can be removed :

1. **Beverages**: Mocafe hot chocolate, decaffinate coffee, peach bull can be moved out of menu as in one year their movement is 0%

2. **Food**: Mothers day special, butter toast, caponata, chicken ham, mushroom and corn, waffles, etc can be removed as their movement in last one year is 0%

3. **Tobacco and liquor** combo can be removed from menu as it movement falls between 0.099 to 0.005%.

4. **Merchandise**: has items like ash trays, dip bowl, cutting glass, etc that are been billed. Those can be kept as table service.

5. Misc: chicken bacon add on, ground meat, raspberry lite shake can be moved out as their movement is 0%
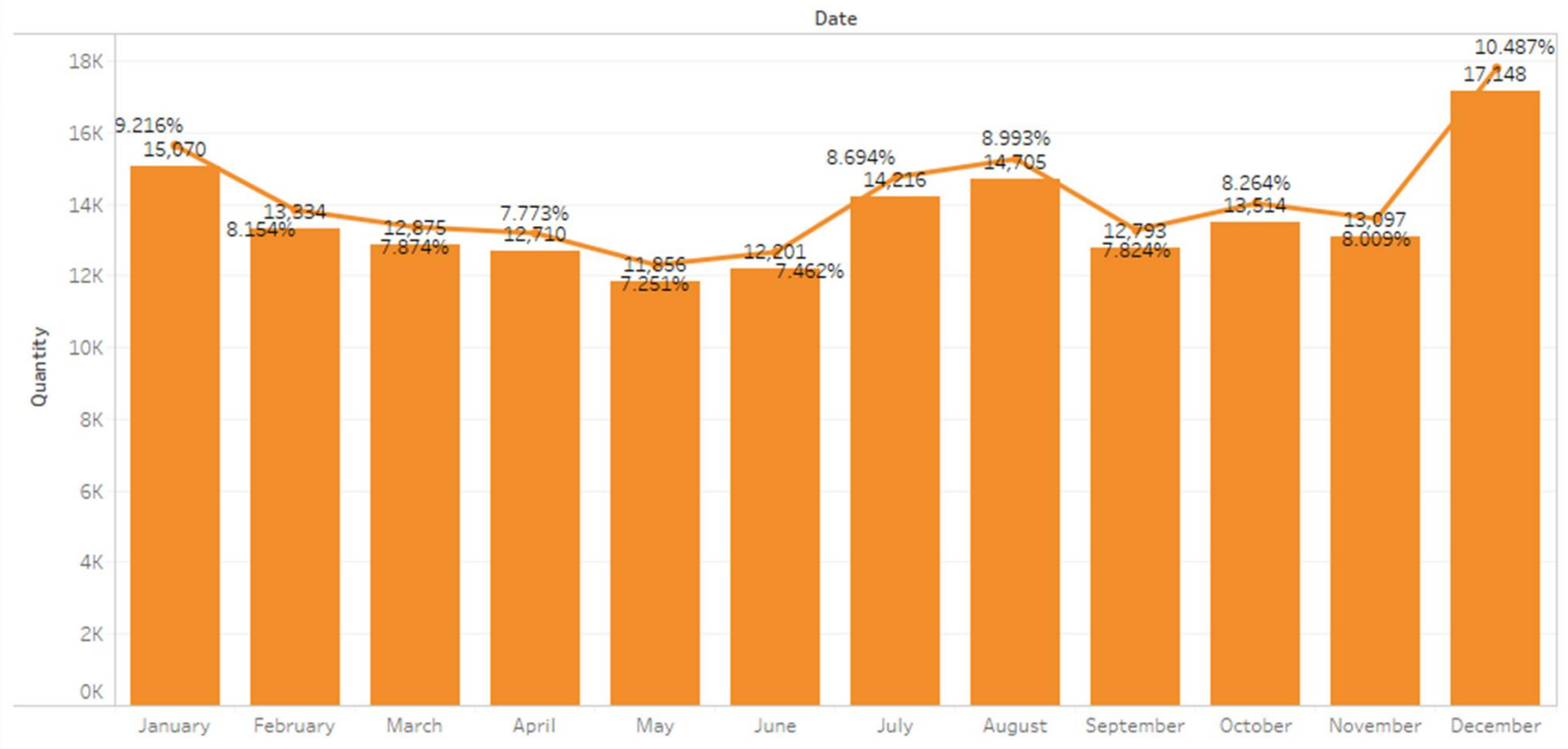
6. Tobacco: 0% movement brand can be moved from the menu.

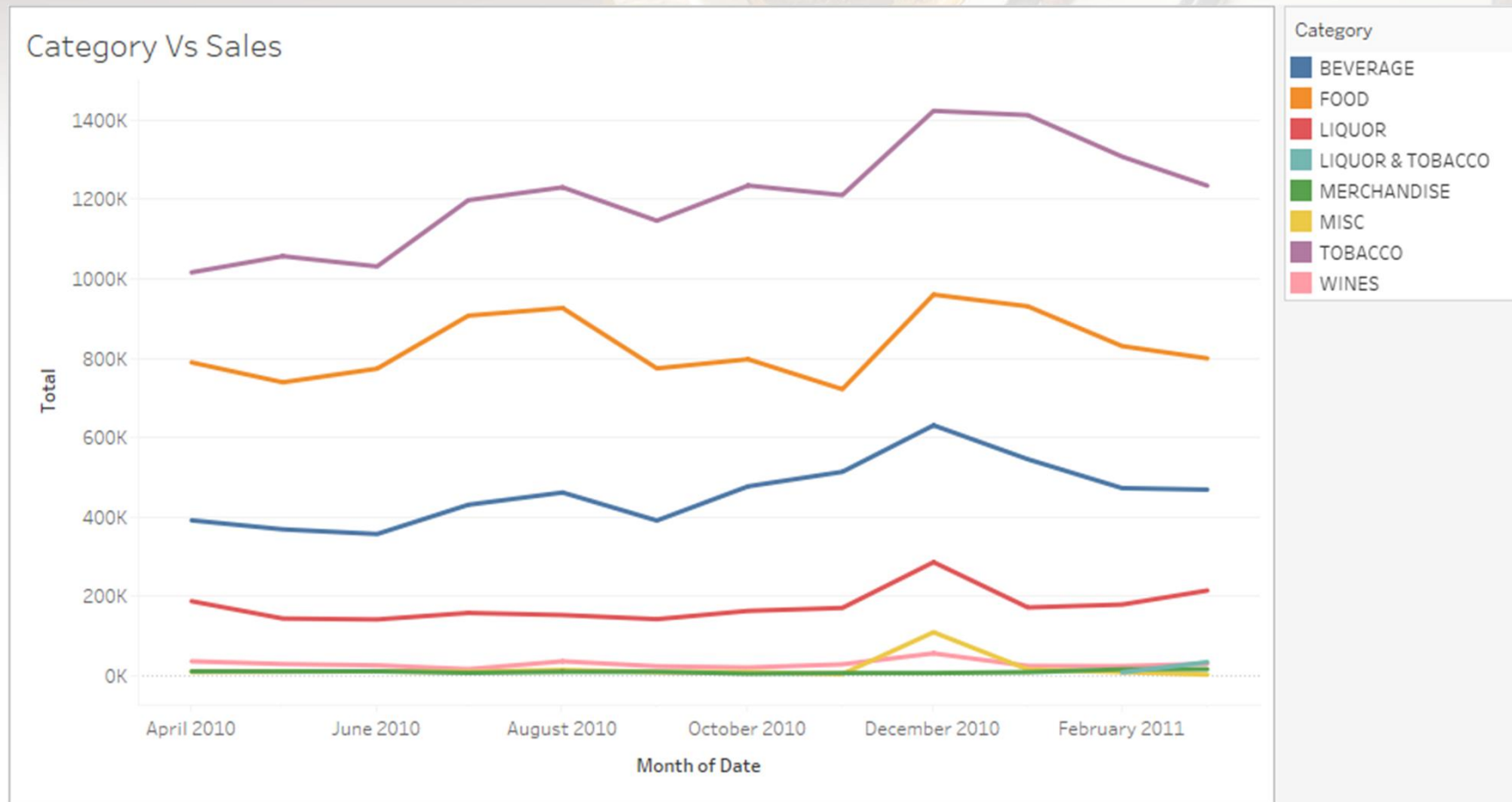# Are there trends across months that you are able to notice?

Tend in terms of discount

Discount Vs Month
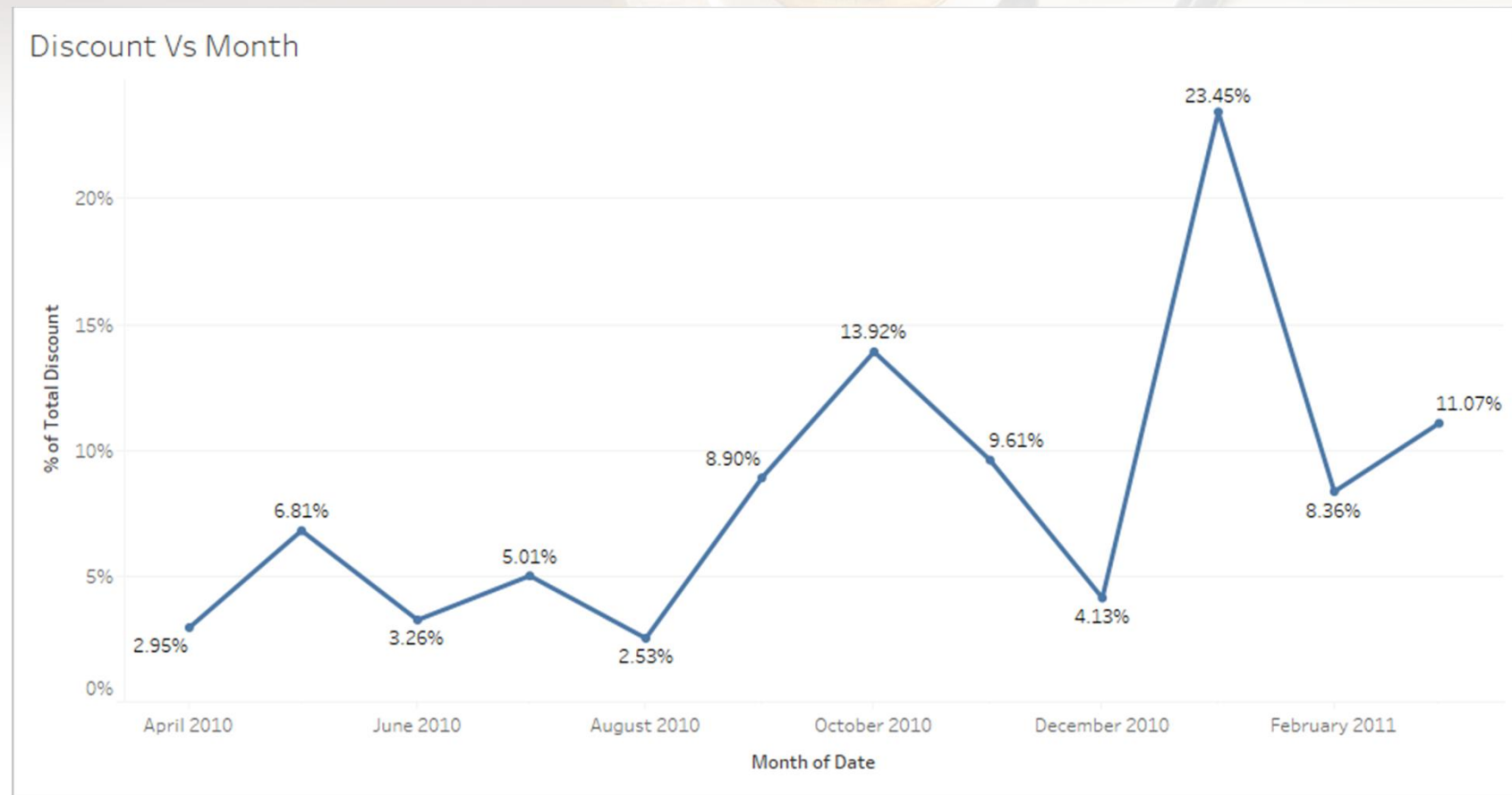
Are there trends across months that you are able to notice?

Date And Max purchase

**Are there trends across months that you are able to notice?**

Are there trends across months that you are able to notice?

- One year data from April 2010 to March 2011, the trend shows a positive growth in the beginning of the month and the highest sales has happened in month of December. On occasion of New year the café shows the highest sales happened in that period with Tobacco, food , liquor and wines.

- Beverage, Food , Tobacco and Liquor orders are having a upward trend while the other category goes stable way.

- December month shows 10.48% of sales and January shows a 9.2% of sales in café.

- July and August month also shows a better sales by 8.6% and 8.9%.

- In terms of the discounts , January month had highest sale in terms of discount. 23.45% of discount was given that period.

- August , September and October month were given an discount offers where we have sales boosted in that period. October the sales happened with discount was for 13%.

- The trends of the café orders and sales are noticeably high during the festive seasons.

Menu Analysis

1.Use of Market Basket Analysis (Association Rules)
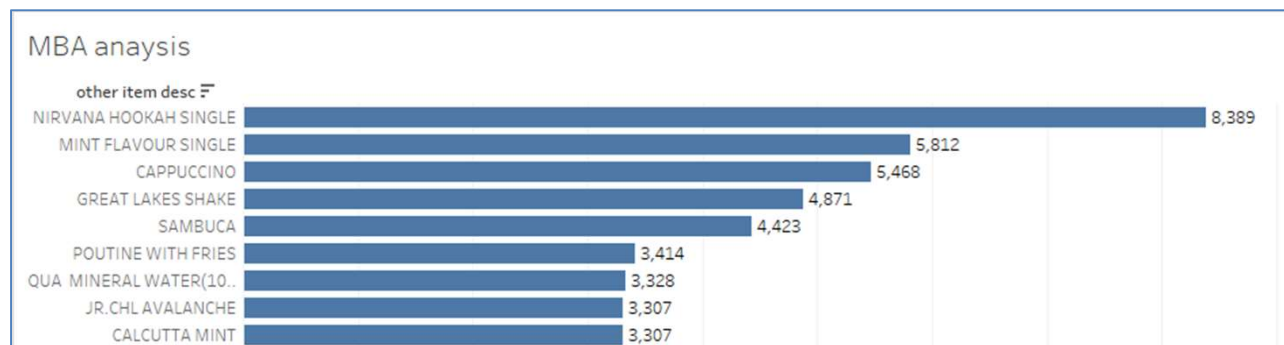

Market Basket Analysis
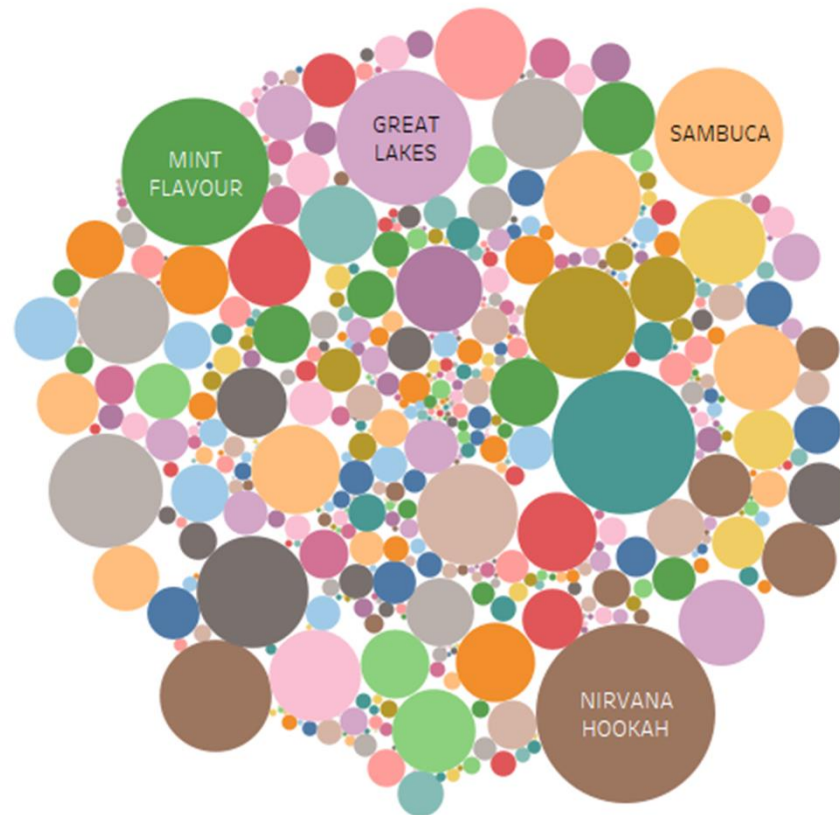
Menu Analysis

1.Use of Market Basket Analysis (Association Rules)

- The Association rule is calculated with a minimum support of 0.005 and a minimum confidence level of 0.075.

- We got the 4 rules out of as below:

Row ID	D Support	D Confide...	D Lift	S Consequent	S implies	[...] Items
rule0	0.005	0.115	0.96	NIRVANA HOOKAH SINGLE	<---	[QUA MINERAL WATER(1000M...
rule1	0.006	0.08	1.019	CAPPUCCINO	<---	[GREAT LAKES SHAKE]
rule2	0.006	0.077	0.923	MINT FLAVOUR SINGLE	<---	[CAPPUCCINO]
rule3	0.006	0.13	1.082	NIRVANA HOOKAH SINGLE	<---	[POUTINE WITH FRIES]

- As per the association rule Nirvana Hookah, Mint flavour single malt, cappuccino, great lakes shake, Sambuca are the moving combinations that are derived through association rule.

MBA anaysis

other item desc

NIRVANA HOOKAH SINGLE	8,389
MINT FLAVOUR SINGLE	5,812
CAPPUCCINO	5,468
GREAT LAKES SHAKE	4,871
SAMBUCA	4,423
POUTINE WITH FRIES	3,414
QUA MINERAL WATER(10..	3,328
JR.CHL AVALANCHE	3,307
CALCUTTA MINT	3,307

Menu Analysis
2. Associations Identified

- As per the association rules identified the combination of the below products can be associated together while taking up the order.

1. Customers ordering Nirvana Hookah single will be taking up Mineral water and Poutine with fries.

2. Customers who orders Cappuccino has also taken up an order for Great lakes shakes.

3. Customers ordering Mint single malt has also taken up an order for Cappuccino.

4. Based on the time we can consider the menu.

- 2 am to 11 am menu should include Cappuccino, Great Lake shake, Qua Mineral water, Mint Flavour single, Poutine with fires, JR CHE Avalanche, Nirvana Hookah and Carlsberg

- 8pm to 2 am menu should include Cappuccino, Great Lake shake, Qua Mineral water, Mint Flavour single, Poutine with fires, Sambuca, Salver Apple single, JR CHE Avalanche, Nirvana Hookah and Carlsberg

Menu Analysis

3. Suggestion of Possible Combos with Lucrative Offers

- The café can bring up with Combos pack which includes Nirvana Hookah single and Mint flavour single malt.
- Combos with Nirvana Hookah and Sambuca can also increase the sales of the café
- Combo offers on Carlsberg and Poutine with fries also goes well.
- Combos including Mint flavour single malt and Poutine with fries .
- Beverages combos including Carlsberg, Tuborg and Redbull along with Poutine with fries.
- Combo offers on Cappuccino and Great lakes shake.
- Silver Apple and Jr Chl Avalanche offers with Qua Mineral water combos can be considered.
- Combos on Mischief Hookah single and Rabat hookah single can be considered.
- Offers on red bull can be considered.

Conclusion

- ❖ Café should launch happy hours in liquor category to increase sales of liquor.
- ❖ Discount should be offered high on combos having tobacco and food.
- ❖ Café should launch more food items that will pull people for breakfast with combo on coffees.
- ❖ Special combos introduce on companies for parties on Fridays can increase the sales of Food, Liquor and Tobacco.
- ❖ Require promotion of merchandise category.
- ❖ Complementary offers to be introduced on the other types of hooks
- ❖ Complementary welcome drinks can be introduced in wines and beers that can help in boosting up the sales of the both products.
- ❖ Introduce special offers on special occasion.

Conclusion:
- • Tobacco category is the top category especially with Nirvana Hookah
- • Weekend sales are high if compared to week days.
- • Tobacco and food sales are high irrespective of day and night
- • Liquor sales are high in night
- • Food items demand are high across the day