




# BACKGROUND

- Over 14 years in the IT industry.
  - System networking and administration.
  - Datacenter Administration.
  - Data Analytics
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# Final Project Recommender System for Online retail

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## Project Structure and Goals



- Preprocessing and feature engineering



- Perform exploratory data analysis,



- Perform Correlation, Cosine Similarity on content based and collaborative filtering models.

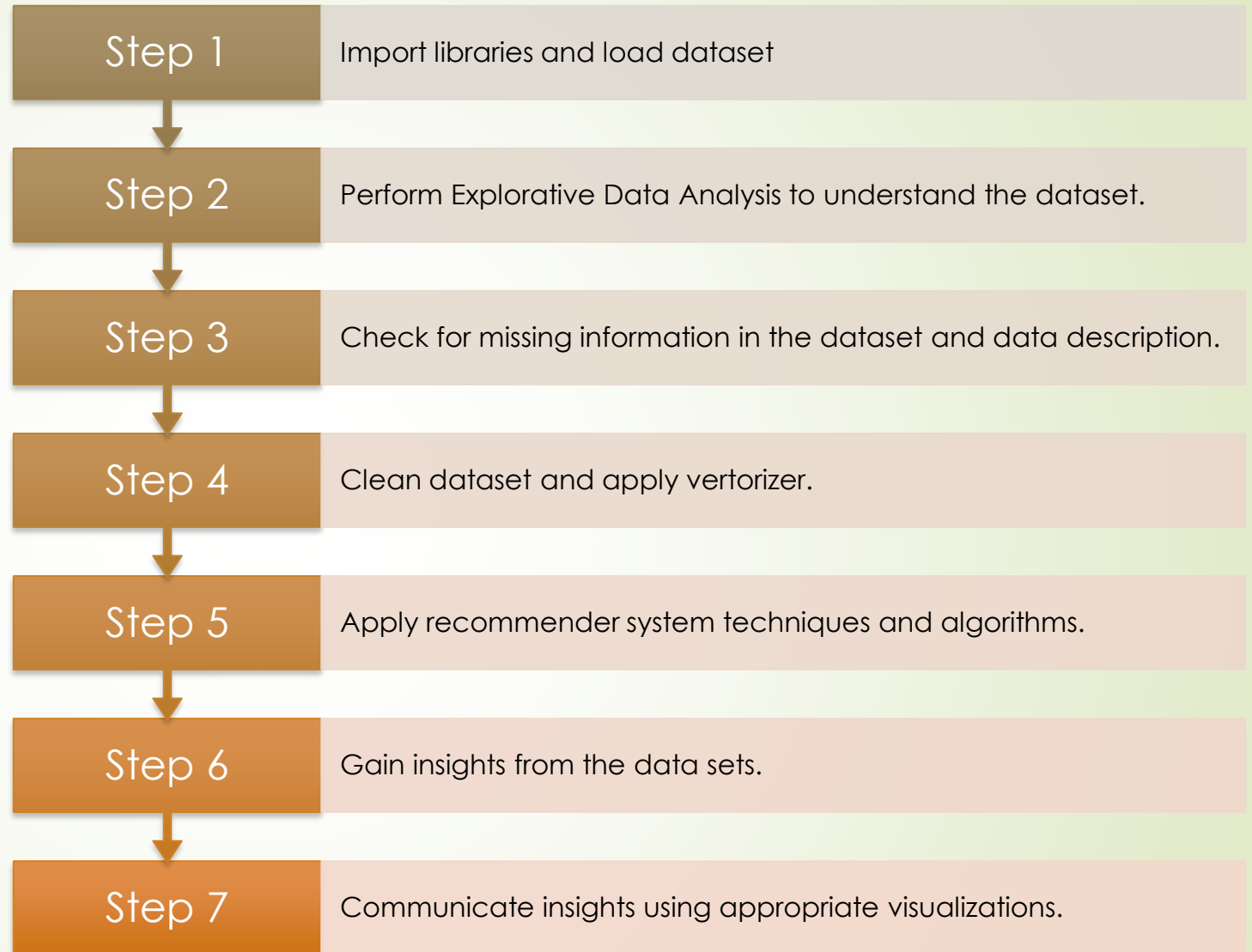


- Apply Market Basket and recommender engine techniques to a real-world online retail data set.



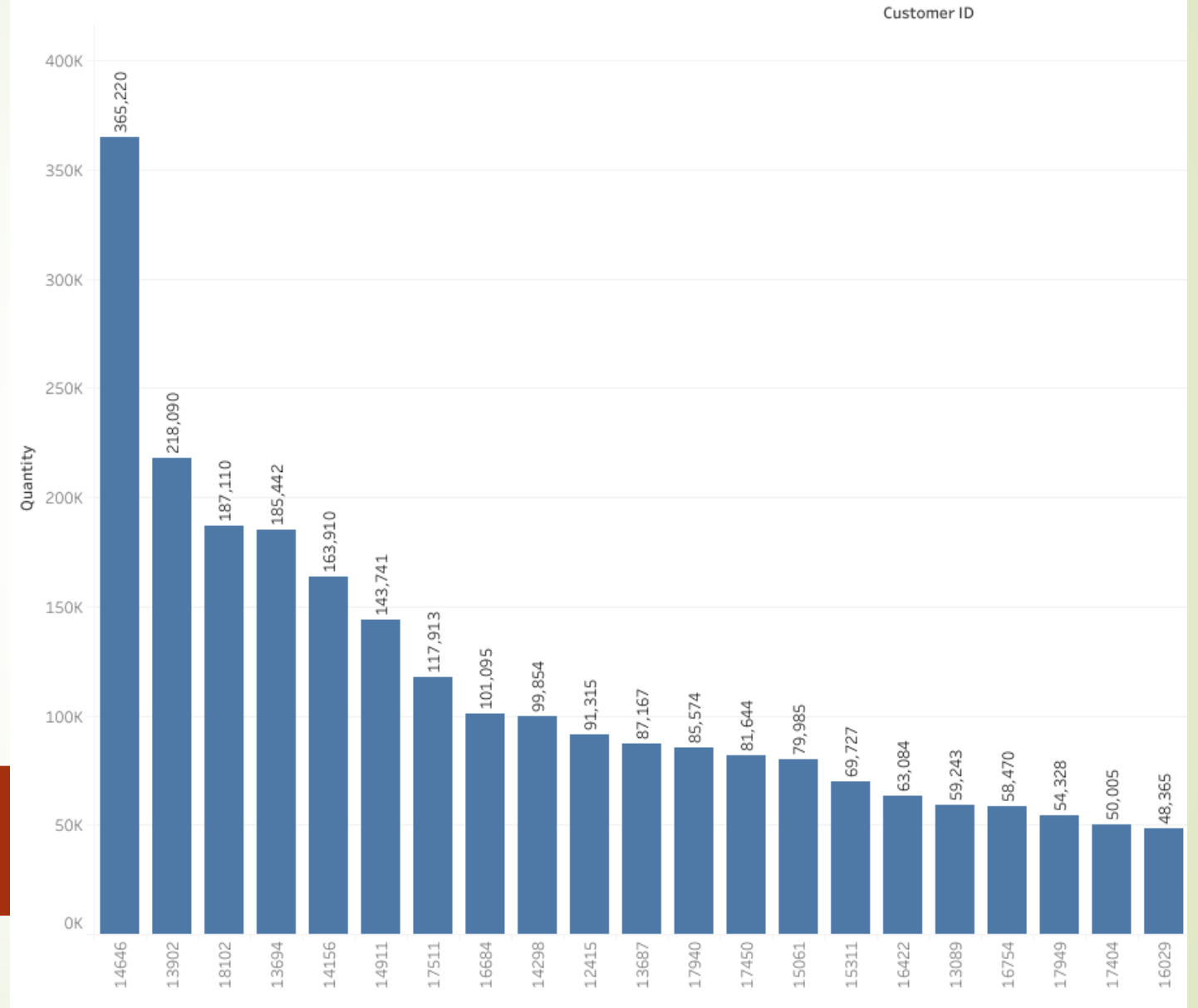
Test recommender system on dataset.

# Process



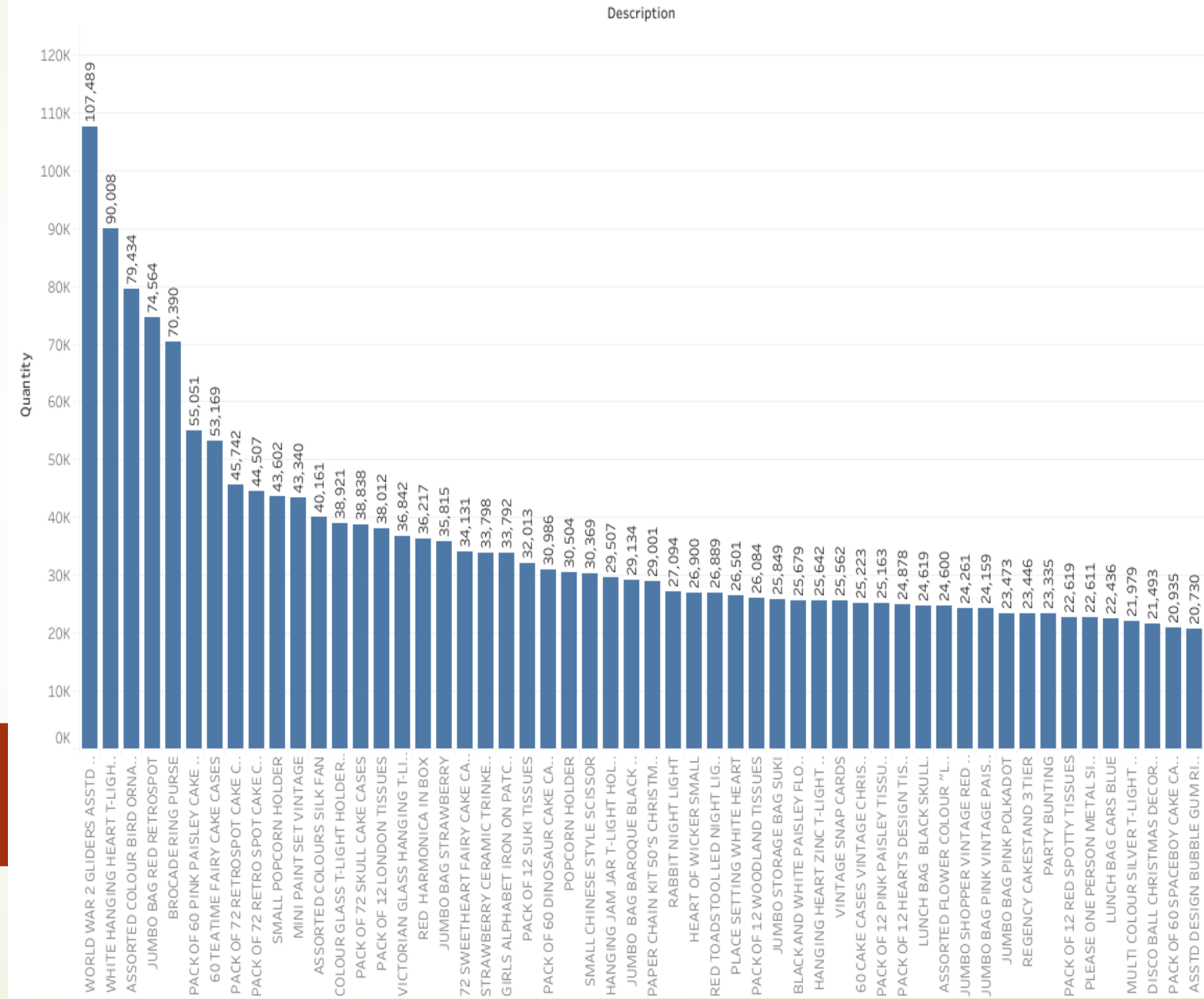
# Top customers based on total purchase

Total quantity purchased by customer

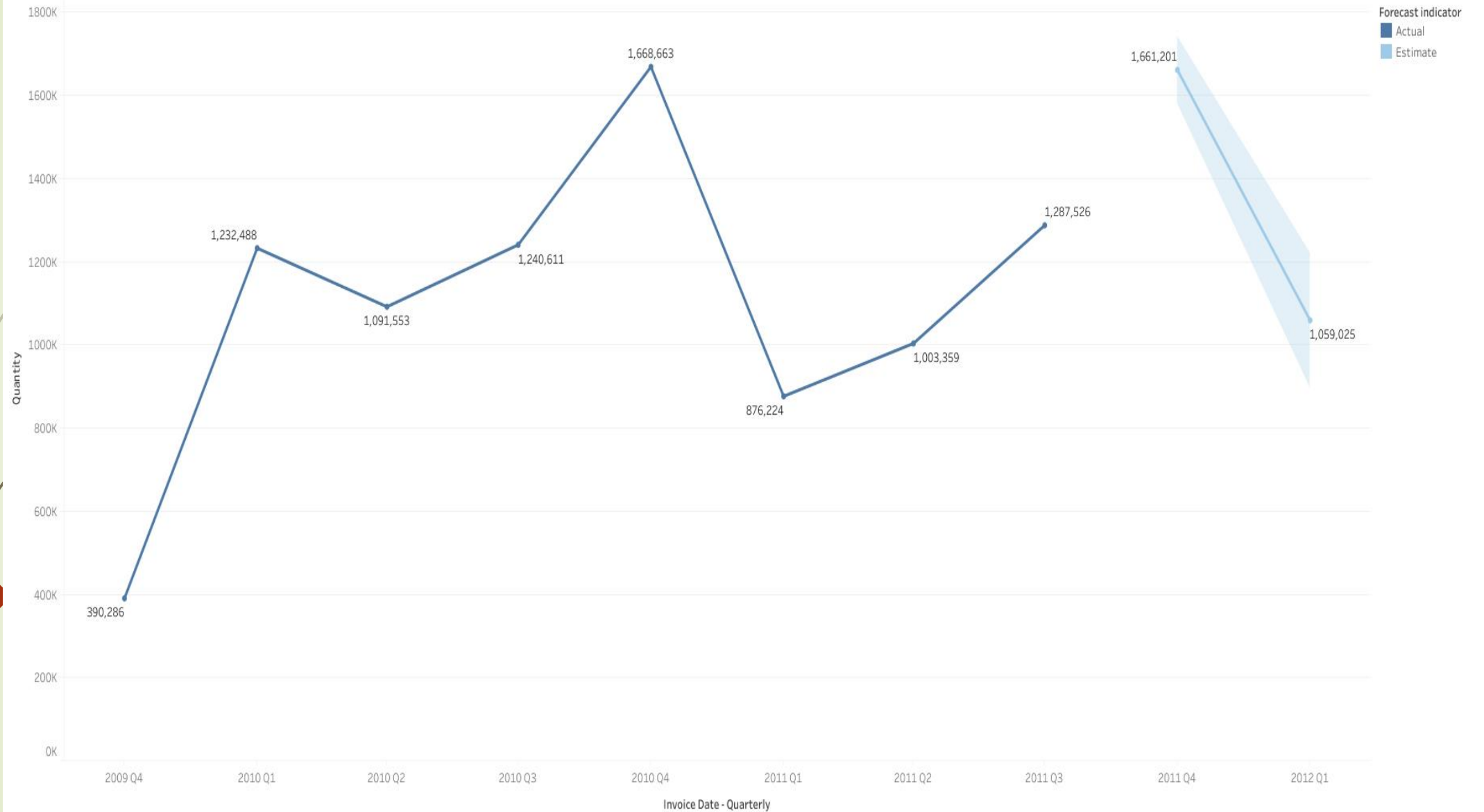


# Top products sold

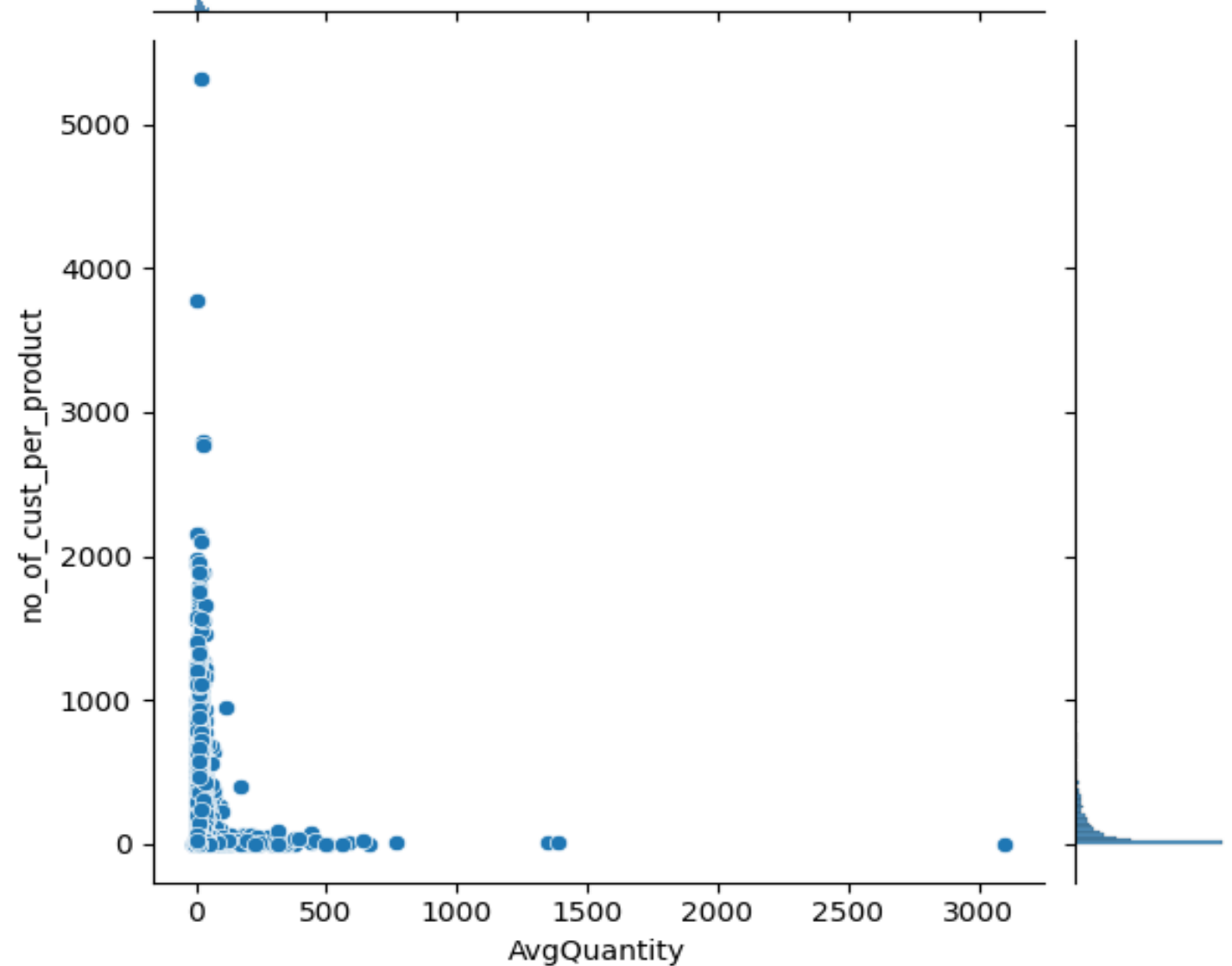
Total quantity of each products



## Quarterly sales of all products



Distribution of  
average quantity of  
product bought and  
number of  
customers who  
bought the product





# Association rules mining and Market Basket Analysis

	support	itemsets	length
169	0.075562	(60 TEATIME FAIRY CAKE CASES, PACK OF 60 PINK ...	2
170	0.070456	(ASSORTED COLOUR BIRD ORNAMENT, REGENCY CAKEST...	2
171	0.076583	(ASSORTED COLOUR BIRD ORNAMENT, WHITE HANGING ...	2
172	0.079986	(BAKING SET SPACEBOY DESIGN, BAKING SET 9 PIEC...	2
173	0.091389	(HEART OF WICKER LARGE, HEART OF WICKER SMALL)	2
174	0.087304	(HEART OF WICKER LARGE, WHITE HANGING HEART T-...	2
175	0.086794	(HEART OF WICKER SMALL, WHITE HANGING HEART T-...	2
176	0.073860	(LOVE BUILDING BLOCK WORD, HOME BUILDING BLOCK...	2
177	0.075221	(LUNCH BAG BLACK SKULL., LUNCH BAG SPACEBOY D...	2
178	0.076413	(LUNCH BAG SPACEBOY DESIGN , LUNCH BAG CARS BLUE)	2
179	0.072498	(LUNCH BAG SPACEBOY DESIGN , LUNCH BAG WOODLAND)	2
180	0.079135	(NATURAL SLATE HEART CHALKBOARD , WHITE HANGIN...	2
181	0.080837	(PAPER CHAIN KIT VINTAGE CHRISTMAS, PAPER CHAI...	2
182	0.107556	(RED HANGING HEART T-LIGHT HOLDER, WHITE HANGI...	2
183	0.070796	(ROSES REGENCY TEACUP AND SAUCER , REGENCY CAK...	2
184	0.083220	(REGENCY CAKESTAND 3 TIER, WHITE HANGING HEART...	2
185	0.074711	(VINTAGE HEADS AND TAILS CARD GAME , VINTAGE S...	2
186	0.075391	(WOODEN PICTURE FRAME WHITE FINISH, WOODEN FRA...	2

## Recommender system

### Description

RETRO PLASTIC ELEPHANT TRAY	8.000000
VINTAGE NOTEBOOK PARIS DAYS	6.403641
YELLOW EASTER EGG HUNT START POST	6.369127
S/2 BEACH HUT TREASURE CHESTS	6.283929
RETRO PLASTIC POLKA TRAY	6.261423
SILVER PHOTO FRAME	6.250709
BEACH HUT SHELF W 3 DRAWERS	6.245813
LOLITA DESIGN COTTON TOTE BAG	6.231365
ASSORTED MINI MADRAS NOTEBOOK	6.225225
SKULLS DESIGN COTTON TOTE BAG	6.211663

Let us compare both the Correlation matrix and Cosine Similarity used for product recommendation.

	correlation	total_of_eachproduct
PARTY BUNTING	1.000000	2144
SPOTTY BUNTING	0.433283	1029
CARD DOLLY GIRL	0.293688	359
SET/2 RED RETROSPOT TEA TOWELS	0.286536	317
LUNCH BAG VINTAGE DOILY	0.279677	561
PACK OF 6 LARGE FRUIT STRAWS	0.276683	119
WALL TIDY RETROSPOT	0.275597	301
SET/20 RED RETROSPOT PAPER NAPKINS	0.268303	954
RETRO PLASTIC ELEPHANT TRAY	0.268234	160
LUNCH BAG PINK POLKADOT	0.259500	1171

PARTY BUNTING	
Description	
PARTY BUNTING	2.000000
SPOTTY BUNTING	0.899407
SET/2 RED RETROSPOT TEA TOWELS	0.665824
PACK OF 6 COCKTAIL PARASOL STRAWS	0.661899
RETRO PLASTIC ELEPHANT TRAY	0.648373
CARD DOLLY GIRL	0.624067
LUNCH BAG PINK POLKADOT	0.617993
16 PIECE CUTLERY SET PANTRY DESIGN	0.601127
LUNCH BAG VINTAGE DOILY	0.593415
LUNCH BAG DOLLY GIRL DESIGN	0.588717

# Conclusion

- Build a content base recommendation system using Item-Item interaction.
- Build a collaborative filtering recommendation system using User-Item interaction.
- Able to make recommendations using the system.
- Performed association rules and Market Basket Analysis using apriori.
- Deployed an interactive recommender system using widget in python.





 **THANK YOU!**

