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Low Level Design

BUDGET SALES ANALYSIS

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1. Introduction

1.1 What is Low-level design document?

The goal of the Low-level design document (LLDD) is to give the internal logic design of the actual program code for the Sales Budget Analysis dashboard. LLDD describes the class diagrams with the methods and relations between classes and programs specs. It describes the modules so that the programmer can directly code the program from the document.

1.2 Scope

Low level design (LLD) is a component-level design process that follows a step-by-step refinement process. The process can be used for designing data structures, required software architecture, source code and ultimately, performance algorithms. Overall, the data organization may be defined during requirement analysis and then refined during data design work.

1.3 Project Introduction

The growth of manufacturing and reselling business in most populated cities are increasing and market competitions are also high. The dataset is one of the historical sales of a company named Adventure Works which has records for 3 years. Good data driven systems for analysing sales can improve the performance of the company and generate more ROI to the stakeholders.

2. Problem Statement

Our "Domain Sale" process is structured to help potential buyers purchase the domain they want immediately without the hassle of contacting the seller directly.

A seller lists a domain for sale at a specific price in our Marketplace. An interested buyer sees this domain for sale and decides to buy it.

3. Dataset information

CustomerKey: Primary key for customer dataset

Birthdate: Birthdate of the customer

MaritalStatus: M- Married / S - Single

Gender: M – Male / F – Female

TotalChildren: Total number of children

NumberChildrenAtHome: Number of children staying along with their parents

Education: Education qualification

Occupation: Present occupation

HouseOwnerFlag: 1– Owns house / 0- Doesn't have a permanent address

NumberCarsOwned: Number of cars owned by the customer

DateFirstPurchase: First date of order by the customer

ProductKey: Primary Key for the product dataset

ProductName: Product name with colour of the product

Subcategory: Sub category name of the product

Category: Category name of the product

ListPrice: Sale price of the product

DaysToManufacture: Days to manufacture the product after receiving the order

ProductLine: Product line name

ModelName: Model name of the product

ProductDescription: more details about the product

SalesTerritoryKey: Primary Key of the Territory dataset

Region: Region name of the order

Country: Country name of the order

OrderDate: Date of the order received

ShipDate: Date when the order left the factory for export

SalesOrderNumber: Invoice number of the order

OrderQuantity: Number of quantities ordered for a product

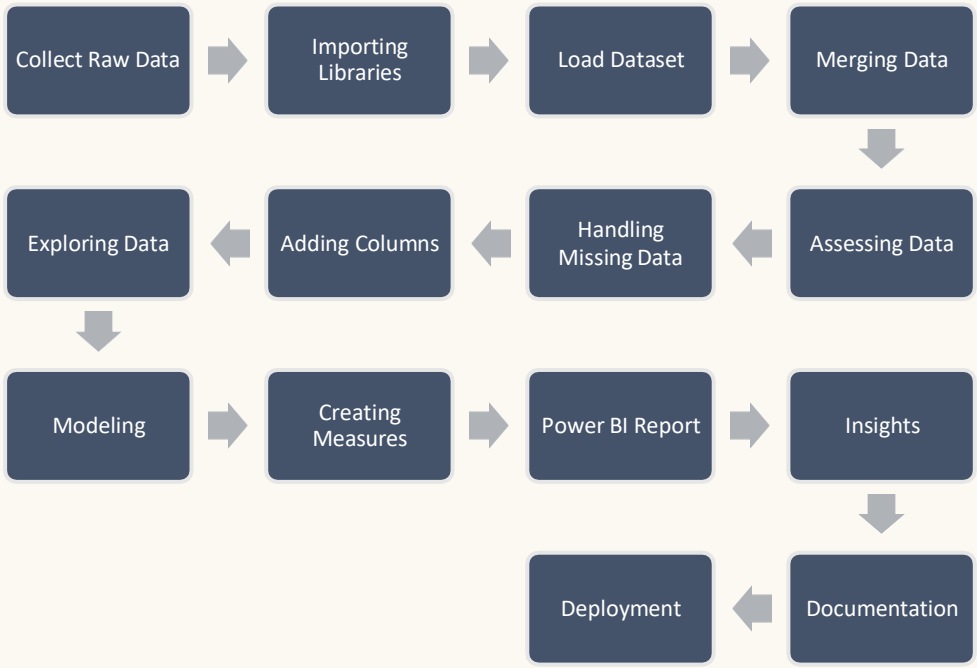
UnitPrice: Per unit sale price of the product

TotalProductCost: Cost of the product

SalesAmount: Total sales price of the product

TaxAmt: Tax collected for the product sold

4. Architecture



Collect Raw Data - This step involves extracting the data from different sources relevant to the problem statement or obtaining data from the client

Importing Libraries – Import analysis related python libraries example – Pandas, Numpy, Plotly, datetime etc

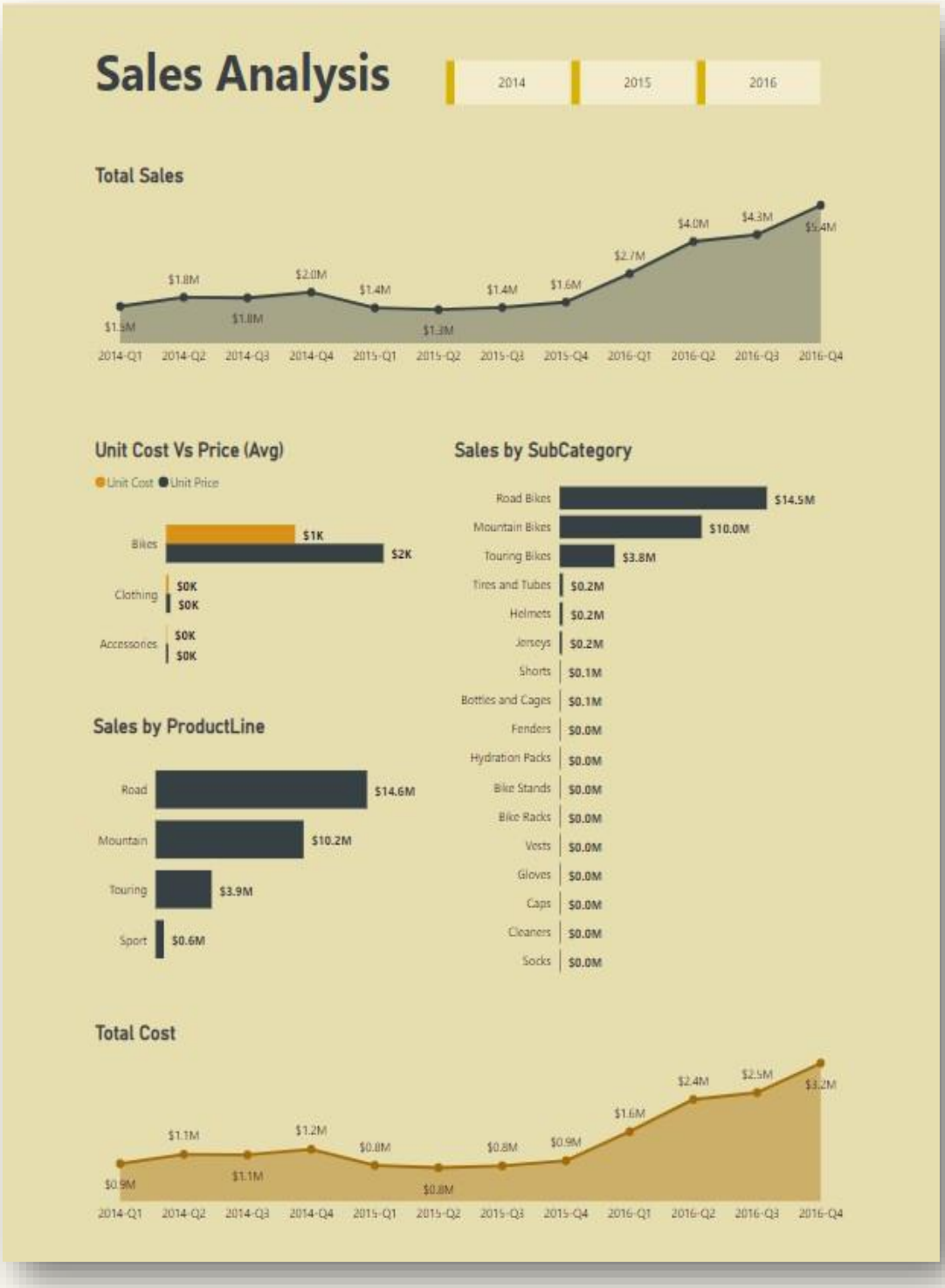
Data Wrangling – Contains following steps gathering data, assessing data, handling missing data and adding columns

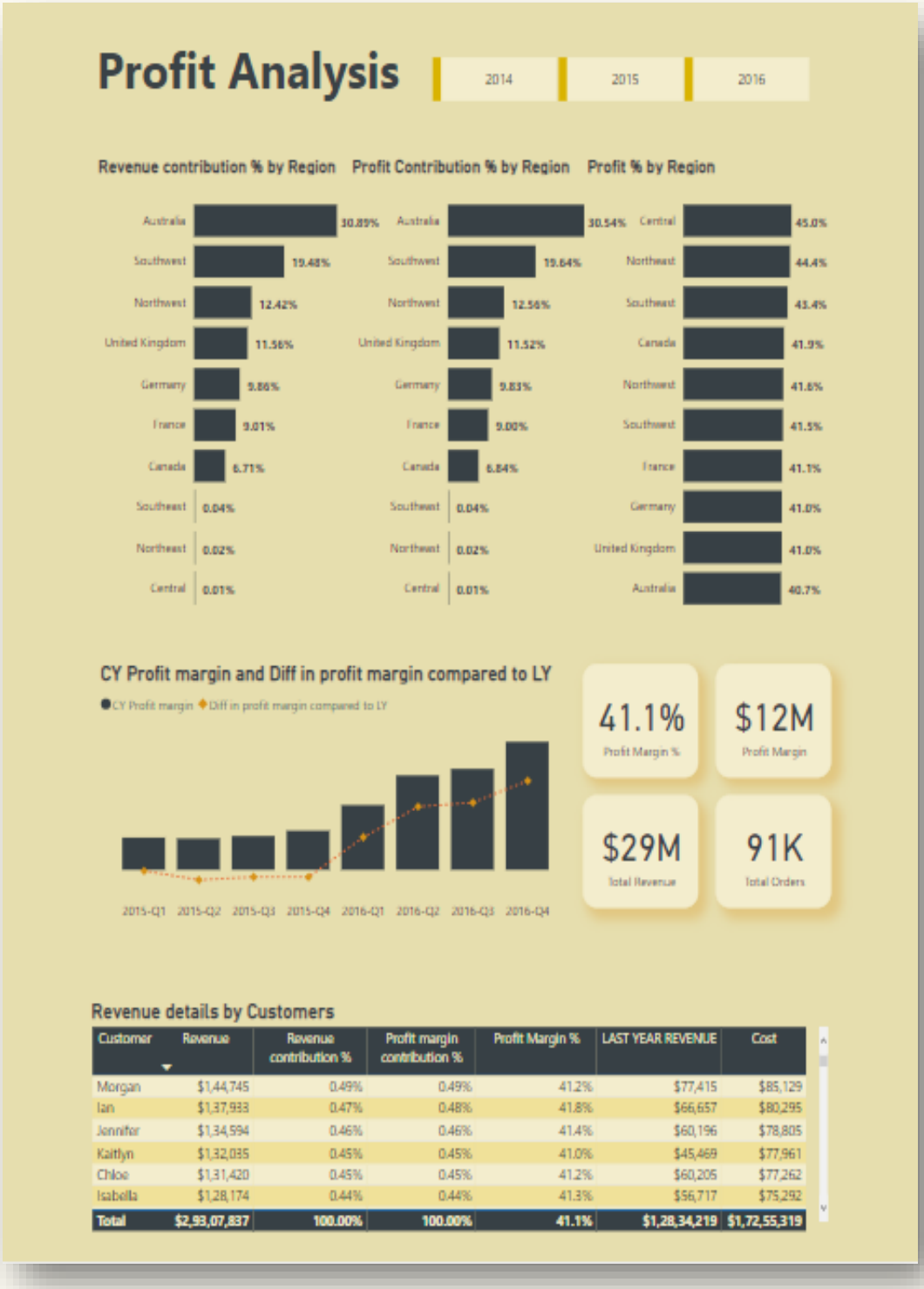
Exploring Data – Once the data is loaded and pre-processed, we preform data analysis using python libraries and Business Intelligence tools like Power BI

Data Modelling - Data Modelling is one of the features used to connect multiple data sources in BI tool using a relationship.

A relationship defines how data sources are connected with each other and you can create interesting data visualizations on multiple data sources

Deployment - The prepared visualizations are deployed on the powerbi.microsoft.com site. Where they will be available publicly


Sales Analysis
2014
2015
2016
Total Sales
$1.5M
$1.8M
$1.8M
$2.0M
$1.4M
$1.3M
$1.4M
$1.6M
$2.7M
$4.0M
$4.3M
$5.4M
2014-Q1
2014-Q2
2014-Q3
2014-Q4
2015-Q1
2015-Q2
2015-Q3
2015-Q4
2016-Q1
2016-Q2
2016-Q3
2016-Q4
Unit Cost Vs Price (Avg)
Unit Cost
Unit Price
Bikes
$1K
$2K
Clothing
$0K
$0K
Accessories
$0K
$0K
Sales by SubCategory
Road Bikes
$14.5M
Mountain Bikes
$10.0M
Touring Bikes
$3.8M
Tires and Tubes
$0.2M
Helmets
$0.2M
Jerseys
$0.2M
Shorts
$0.1M
Bottles and Cages
$0.1M
Fenders
$0.0M
Hydration Packs
$0.0M
Bike Stands
$0.0M
Bike Racks
$0.0M
Vests
$0.0M
Gloves
$0.0M
Caps
$0.0M
Cleaners
$0.0M
Socks
$0.0M
Sales by ProductLine
Road
$14.6M
Mountain
$10.2M
Touring
$3.9M
Sport
$0.6M
Total Cost
$0.9M
$1.1M
$1.1M
$1.2M
$0.8M
$0.8M
$0.8M
$0.9M
$1.6M
$2.4M
$2.5M
$3.2M
2014-Q1
2014-Q2
2014-Q3
2014-Q4
2015-Q1
2015-Q2
2015-Q3
2015-Q4
2016-Q1
2016-Q2
2016-Q3
2016-Q4



Revenue details by Customers

Customer	Revenue	Revenue contribution %	Profit margin contribution %	Profit Margin %	LAST YEAR REVENUE	Cost
Morgan	$1,44,745	0.49%	0.49%	41.2%	$77,415	$85,129
Ian	$1,37,933	0.47%	0.48%	41.8%	$66,657	$80,295
Jennifer	$1,34,594	0.46%	0.46%	41.4%	$60,196	$78,805
Kaitlyn	$1,32,035	0.45%	0.45%	41.0%	$45,469	$77,961
Chloe	$1,31,420	0.45%	0.45%	41.2%	$60,205	$77,262
Isabella	$1,28,174	0.44%	0.44%	41.3%	$56,717	$75,292
Total	**$2,93,07,837**	**100.00%**	**100.00%**	**41.1%**	**$1,28,34,219**	**$1,72,55,319**

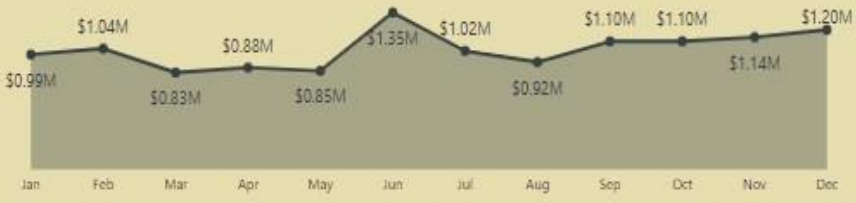
Variance Analysis

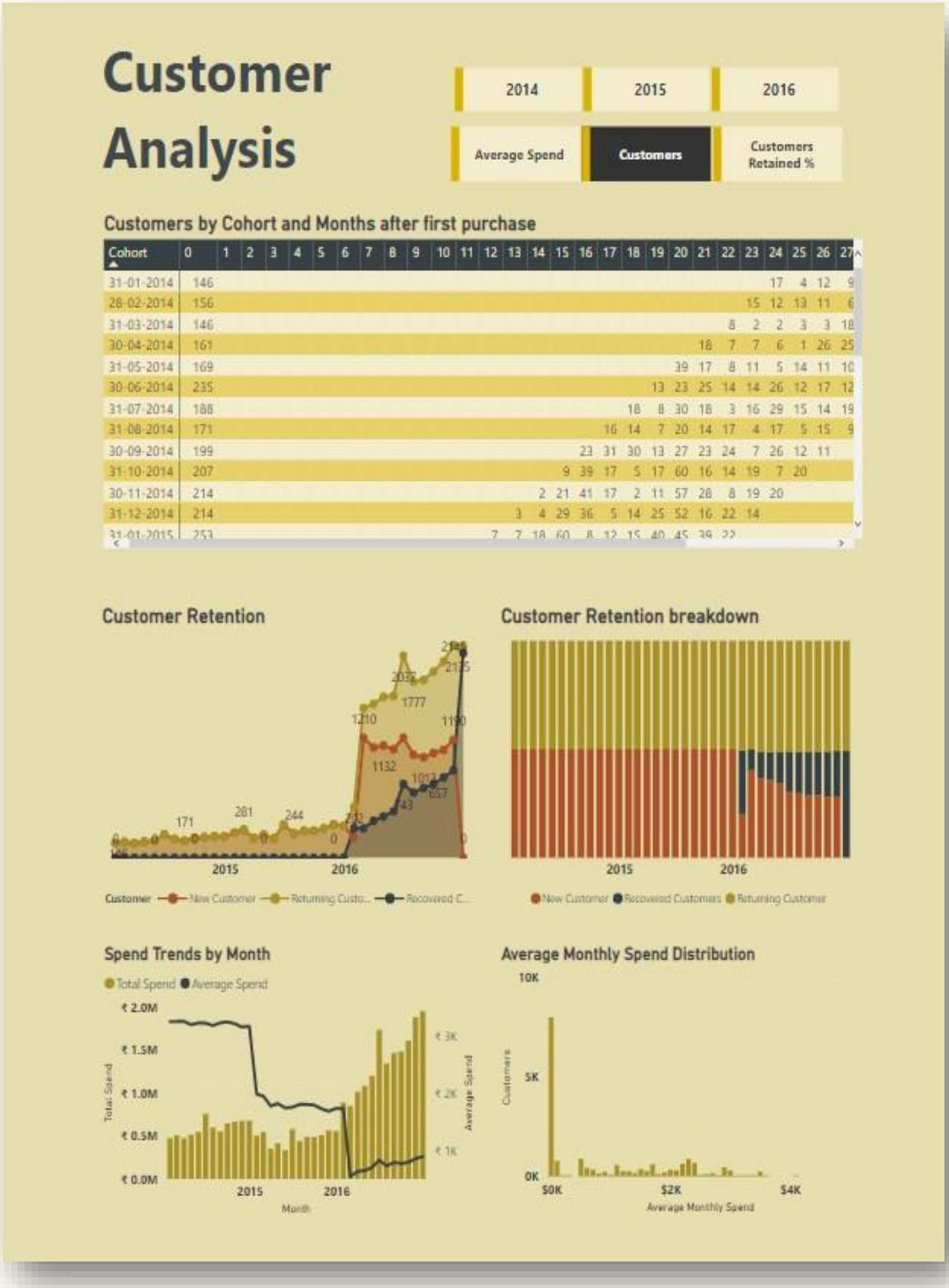
Sales by Category & Variance to Target

Sales by Product & Variance to Target

Category	Sales	Target sales	Variance	Variance %
Clothing	**$3,22,677**	**₹ 3,33,741**	**($11,064)**	**-3.3%**
Vests	$33,465	₹ 34,565	($1,101)	
Socks	$4,882	₹ 5,449	($567)	
Shorts	$67,050	₹ 68,453	($1,403)	
Jerseys	$1,65,066	₹ 1,70,938	($5,872)	
Gloves	$33,380	₹ 33,965	($585)	
Caps	$18,834	₹ 20,371	($1,537)	
Bikes	**$2,83,18,145**	**₹ 1,58,48,226**	**$1,24,69,919**	**78.7%**
Touring Bikes	$38,44,801	₹ 40,55,965	($2,11,164)	
Road Bikes	$1,45,20,584	₹ 52,57,897	$92,62,687	
Mountain Bikes	$99,52,760	₹ 65,34,364	$34,18,396	
Accessories	**$6,67,015**	**₹ 6,87,607**	**($20,592)**	**-3.0%**
Tires and Tubes	$2,31,300	₹ 2,42,777	($11,477)	
Hydration Packs	$38,823	₹ 39,803	($980)	
Helmets	$2,15,923	₹ 2,21,905	($5,982)	
Fenders	$44,268	₹ 43,670	$598	
Cleaners	$6,869	₹ 6,465	$404	
Bottles and Cages	$55,031	₹ 57,369	($2,338)	
Bike Stands	$37,842	₹ 38,757	($915)	
Bike Racks	$36,960	₹ 36,861	$99	
Total	**$2,93,07,837**	**₹ 1,68,69,574**	**$1,24,38,263**	**73.7%**

Variance by Months




Customer Analysis
2014
2015
2016
Average Spend
Customers
Customers Retained %
Customers by Cohort and Months after first purchase
Cohort 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
31-01-2014 146 17 4 12 9
28-02-2014 156 15 12 13 11 6
31-03-2014 146 8 2 2 3 3 18
30-04-2014 161 18 7 7 6 1 26 25
31-05-2014 169 39 17 8 11 5 14 11 10
30-06-2014 235 13 23 25 14 14 26 12 17 12
31-07-2014 188 18 8 30 18 3 16 29 15 14 19
31-08-2014 171 16 14 7 20 14 17 4 17 5 15 9
30-09-2014 199 23 31 30 13 27 23 24 7 26 12 11
31-10-2014 207 9 39 17 5 17 60 16 14 19 7 20
30-11-2014 214 2 21 41 17 2 11 57 28 8 19 20
31-12-2014 214 3 4 29 36 5 14 25 52 16 22 14
31-01-2015 253 7 7 18 60 8 12 15 40 45 39 22
Customer Retention
171
281
244
1777
1210
1132
2015
2016
Customer
New Customer
Returning Custo...
Recovered C...
Customer Retention breakdown
2015
2016
New Customer
Recovered Customers
Returning Customer
Spend Trends by Month
Total Spend
Average Spend
₹ 2.0M
₹ 1.5M
₹ 1.0M
₹ 0.5M
₹ 0.0M
Total Spend
₹ 3K
₹ 2K
₹ 1K
Average Spend
2015
2016
Month
Average Monthly Spend Distribution
10K
5K
0K
Customers
$0K
$2K
$4K
Average Monthly Spend