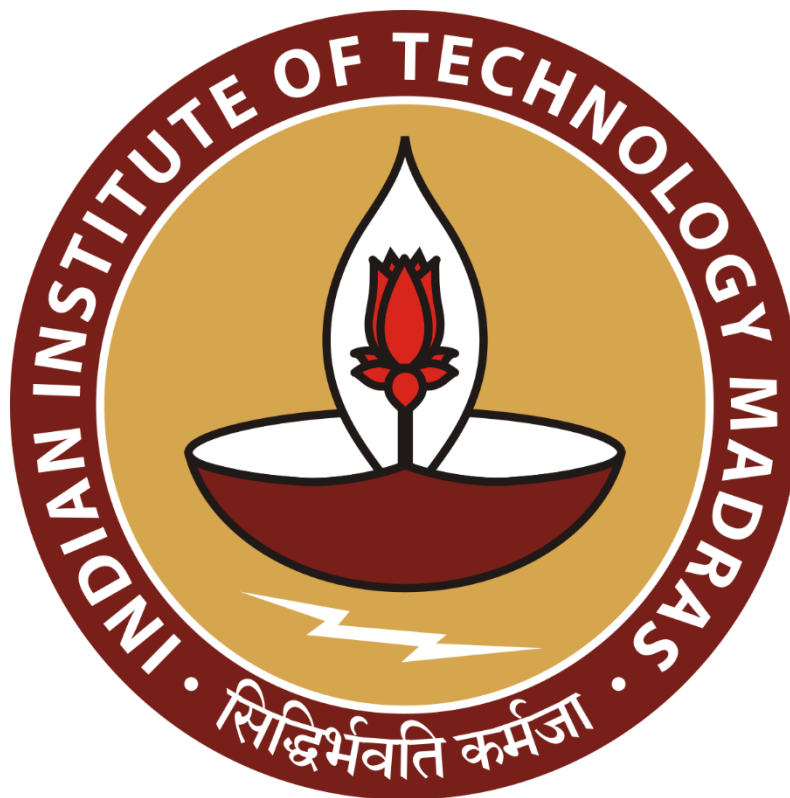# Bike showroom Data analysis

Final submission

Submitted by

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Executive Summary (Bike Showroom)

Title: Improvement of Revenue of the bike showroom by analyzing data

'Shreeji Auto Agency' is Bike showroom of Hero MotoCorp. Showroom is located at 'Vadali', Dis-Sabarkantha, Gujarat. (Location link). Showroom's owner Mahendrabhai and Rajubhai runs showroom from last 5 years but showroom is opened since last 15 years. Showroom covers approximately 10 tehsils and their villages. showroom's vision is to sell high-quality bikes and exceptional customer service to village peoples.

Showroom sells various type of bikes like Splendour Plus, Passion Pro, HF Deluxe etc. and scooters like pleasure, Maestro, and Destini etc. Bike showroom is B2C business as showroom sells the bikes or scooters to the customer directly. 'Shreeji Auto Agency' has dealer from the district showrooms for buying the bike stock. Showroom has good team and experts like technicians, salespeople, service managers, financial specialists, etc.

There are a number of issues that the showroom is dealing with, including the fact that they lack the expertise to monitor business, which results in revenue generated being comparably lower, the fact that they are unsure of the amount of stock that will be needed in any given month based on past sales, the fact that each customer has a different preference for the type of bike they want to buy, which makes it difficult for them to determine which bikes should be in stock, and the fact that some locations experience higher sales than others due to location and season.

In order to address these issues, the owner of the showroom will provide data in the form of an excel spreadsheet, which will be analysed. By doing this, the stock requirements and customer purchasing patterns can be determined, as well as the issues with seasonally and geographically based sales.

Detailed Explanation of Analysis Process/Method

The data provided by the showroom owner was in the excel format itself. So, for the analysis majorly Ms. Excel us being used. Received data was unstructured means there were unnecessary columns and null values are present in the dataset. first data preprocessing is done process is given below:

Data Preprocessing:

- Firstly 'DATE' column has datatype of date time which is convert into date only as there is no need of time for the analysis.
- 'contact ID', 'MO' (mobile number), 'BILL NO', 'REG NO', 'Dealer', 'STATE', 'vehicle class, 'plant' these columns are dropped as these columns doesn't play important role in the analysis process.
- From the 'DATE' columns 'Month' columns is being derived using excel formula =TEXT(Cell,"mmmm").
- 'Tehsil' column is derived manually from the 'CITY/Village' column so that area wise sales analysis can be performed.
- 'bike colour' and 'vehicle type' columns are derived manually from the 'SKU Description' column.
- 'bike model' column is manually added with the help of SKU description.

Before the Data preprocessing data was like given below:

Column	Data type
DATE	object
SKU	object
SKU Description	object
NAME	object
CITY/Village	object
contact ID	object
MO	int
HP	object
BILL NO	object
STATE	object
Dealer	object
Vehicle class	object
plant	object
PRICE	float
REG NO	object

Table 1: Data information of collected data

Data provided by the showroom is given in the below link:

https://1drv.ms/x/s!ArIId7fuekEDlWmTIsm6KP-rUYm6

Information of pre-processed data:

DATE: date of purchase of bike/scooter

Month: month of purchase

SKU: unique value to all bike models

SKU Description: description of given SKU

NAME: name of the customer

CITY/VILLAGE: name of the village or city that customer belongs to

Tehsil: tehsil of the customer's village

HP: stands for High Purchase is mode of payment

PRICE: selling price of the bike/scooter to the customer

bike colour: colour of purchasing bike

vehicle type: bike or scooter

bike model: model of the bike or scooter

link of cleaned data:

https://1drv.ms/x/s!ArIId7fuekEDlWZsHPK914LZhWeB

Analysis:

For the analysis Ms. Excel is used. Analysis is done via pivot tables or graph visualization. Collected data is of year 2022.

1. First, a monthly review is conducted to determine how to increase showroom sales. A pivot table with the 12 months of 2022 is built for that purpose. A pivot table is made for the sale of both bikes and scooters. According to the pivot table, 326 bikes will be sold in total in 2022, but just 20 scooters.

Row Labels	Bike	Scooter	Grand Total
January	9	0	9
February	4	0	4
March	15	0	15
April	19	0	19
May	49	2	51
June	22	2	24
July	23	4	27
August	31	0	31
September	36	1	37
October	79	7	86
November	30	3	33
December	9	1	10
Grand Total	326	20	346

Table 2: month wise sales

2. There were 68 SKUs in the data set but some of them are less selling SKU so below selling of 6 are considered as other SKU and remaining kept as it was for the better analysis result.
After the compression of the SKU data pivot table is created and this pivot table is given below.

Row Labels	Count of SKU
HDESDDRVCFIMNB	6
HDLXADRSCFIGBK	6
HDLXAIRSCFIGBK	6
HDLXAIRSCFIRBK	10
HDLXMDRSCFIGBK	6
HFNDTIRSCCRPBK	6
HFNDTIRSCCRRBK	6
HSPPBIRSCFIBLA	53
HSPPCDRSCFIBKS	9
HSPPCDRSCFIRPB	11
HSPPCIRSCCRGBK	6
HSPPCIRSCFIBKS	24
HSPPDDRSCCRGBK	6
HSPPDIRSCCRGBK	6
HSPPEDRSCFIRPB	6

HSPPEDRSCFISBK	6
HSPPEIRSCFISBK	8
HSPPMIRSCFIBLA	20
HSPPNIRSCFIBBK	10
HSPPNIRSCFITGB	16
HSPPYIRSCFIRPB	8
other	111
Grand Total	**346**

Table 3: sales of different SKUs

To determine which bike model sells better and which bike model sells worse than others, a pivot table of SKUs is generated. Therefore, the need for stock is determined using this technique.

3. Bike colour column is used to identify different customer's purchasing patterns. With the use of 'bike colour' and 'SKU' pivot table is created.

Row Labels	Count of SKU
BBK	10
BFS	2
BGL	2
BHG	2
BKB	4
BKG	4
BKP	1
BKS	52
BLA	78
BLK	12
BMG	5
BRD	2
CBR	1
FSV	1
FWT	2
GBK	41
HGR	4
MAG	1
MNB	10
MSG	1
MVG	2
NRD	1
PBK	12
PSW	6
RBK	36
RPB	36
SRD	2
TGB	16
Grand Total	**346**

BBK – blue black

BFS – black force silver

BGL – black gold

BHG - black heavy grey

BKG – black grey

BKP – black purple

BKS – black silver

BLA – black and accent

BLK- full black

BMG – blue mat axis grey

BRD – blazing red

CBR – chestnut brown

FSV – force silver melt

FWT – pearl fadeless white

GBK- grey black

HGR – heavy grey matt

MAG – mat axis grey

MNB – metallic nexus blue

MVG – matt vernier grey

NRD – noble red

PBK – purple black

PSW – pearl silver white

RBK – red black

RPB – red purple black

SRD – sports red

Table 4: colour wise sales   TGB – tornado grey

The customer's preferred colour can be determined using this information, allowing the showroom to stock more of the bikes in the most popular colours.

4. To improve location wise sales analysis done on Tehsil column which is derived from the 'CITY/Village' column. Table is given below of location wise sales.

Row Labels	Count of SKU
BHILODA	6
HIMMATNAGAR	3
IDAR	96
KADI	1
KHEDBRAHMA	47
PRANTIJ	5
SATLASANA	8
VADALI	176
VIJAYNAGAR	4
Grand Total	**346**

Table 5: location wise sales

With the aid of this analysis, marketing is required in less commercially viable areas in order to enhance sales.

5. Selling of bikes and scooters is compared. So that showroom can decide not to keep more stock of less selling vehicle type.

Row Labels	Count of SKU
Bike	326
Scooter	20
Grand Total	**346**

Table 6: sales of bikes and scooters

Only 5.7% of scooters are sold, compared to 94.3% of bikes. Scooters must be the emphasis of the showroom, and several strategies must be used to increase scooter sales.

6. The bike model column, which lists several bike and scooter models, is used to identify popular bike types.

Count of SKU Row Labels	Column Labels Bike	Scooter	Grand Total
DESTINI 125		12	12
DUET		6	6
GLAMOUR	2		2
GLAMOUR XTEC	7		7
HF 100	2		2
HF DELUXE	81		81
PASSION PRO	2		2
PASSION XPRO	2		2
PASSION XTEC	2		2
PLEASURE		2	2
SPLENDOR +	189		189
SPLENDOR+XTEC	26		26
SUPERSPLENDOR	8		8
XTREME 160R	5		5
Grand Total	326	20	346

Table 7: sales of different bike and scooter models

The analysis of bike models reveals that the 'SPLENDER +' is the most popular bike model, with 189 bikes sold to far. Then, out of 81 bikes, "HF DELUXE" has the second-highest sales. Some bike models, such as the GLAMOUR, HF100, PASSION PRO, PASSION XPRO, and PASSION XTEC, sell less than others. The DESTINI 125, PLEASURE, and DUET are the three scooter models that will be sold by 2022. In Which of the three, DESTINI 125 scooter models sold the most.
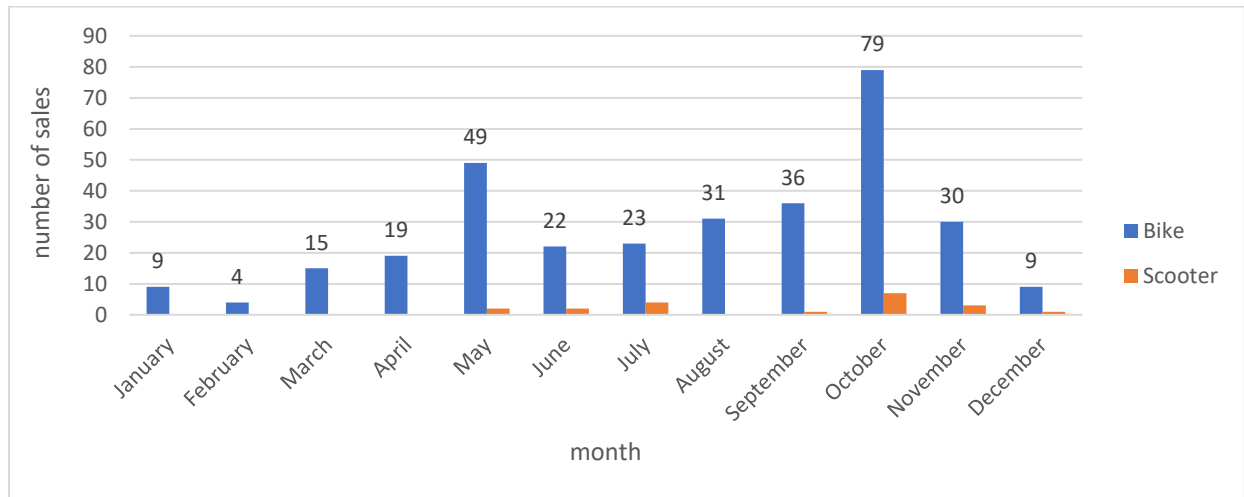
Results and Findings

1. Month wise sales:

Figure 1. month wise selling of bikes and scooters

The graph above shows the month-by-month sales of bikes and scooters. It is evident from the graph that bike sales are higher than scooter sales. Sales are increasing for the first four months, then May sees a big surge in sales. After May, sales decline again for the next two months. After June, sales increase until September and then dramatically increase in October. Therefore, considering that sales are strong in May and October, a dealership should have a sufficient inventory of motorcycles for sale. The proprietor of the store can suitably maintain the inventory of bikes and scooters as a result. The sale of scooters is virtually nonexistent throughout the months of January, February, March, April, and August. This showroom can maintain its inventory of bikes and scooters in accordance with it.

2. Location wise Sales:

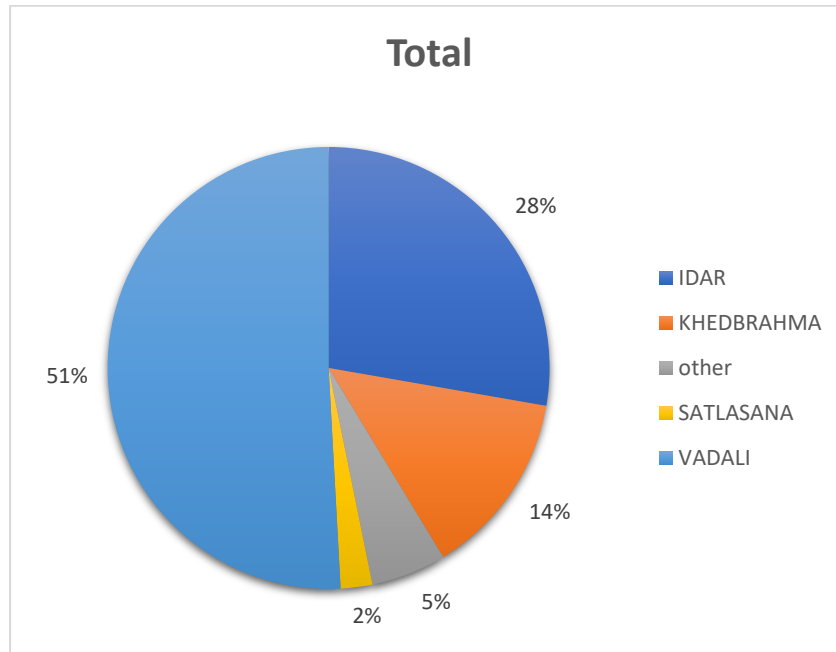Location wise sales are represented in pie chart.

Figure 2: sales on different locations (Tehsil)

As the graph demonstrates, "Vadali" accounts for 51% of bike sales. Then, Khedbrahma accounts for 14% of sales, Idar for 28%, and Satlasana for 2%. Other tehsils, such as Kadi, Himmatnagar, Bhiloda, and Prantij, account for 5% of the graph's sales because they sell fewer bikes than other tehsils.

Since the showroom is situated in the "Vadali" Tehsil, bikes account for 51% of all sales. Most of the bikes sold to villagers come from Vadali. Idar and Khedbrahma cover 28% and 14%, respectively, because they are neighbours. As this tehsil has its own city's showroom, places like Kadi, Himmatnagar, Prantij, and Bhiloda are far from the showroom.

3. Revenue generated in year 2022:

Revenue generated throughout the year 2022 is given below month wisely. Graph is made with respect to price of the bike and month of selling of the bike.
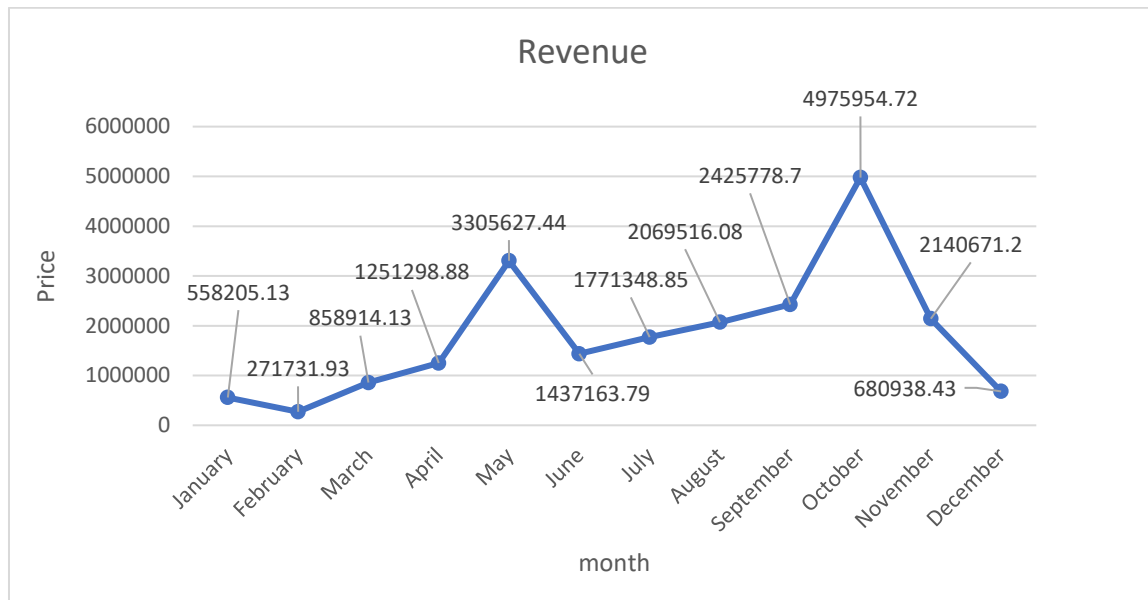

Figure 3: month wise Revenue trendline

According to the graph, revenue earned from month to month increases from January to May, then decreases in June, increases again in October, and decreases again in December. Due to higher bike sales in October compared to other months, the maximum income of Rs. 4975957.72 was made in that month. After October, May generates the second-highest amount of revenue, or Rs. 3305627.44. The least amount of money is made in February.

According to Mahenderbhai, the proprietor of the dealership, October is a festival month with Navratri, Dashera, and Diwali, among others. In contrast, May is a month with increased bike sales and higher revenue due to vacation time and travel.

4. Purchasing patterns of customer:

Based on different SKU:

Histogram is given of selling of different SKUs. Here less selling SKUs below 6 are counted as 'other' SKU category.
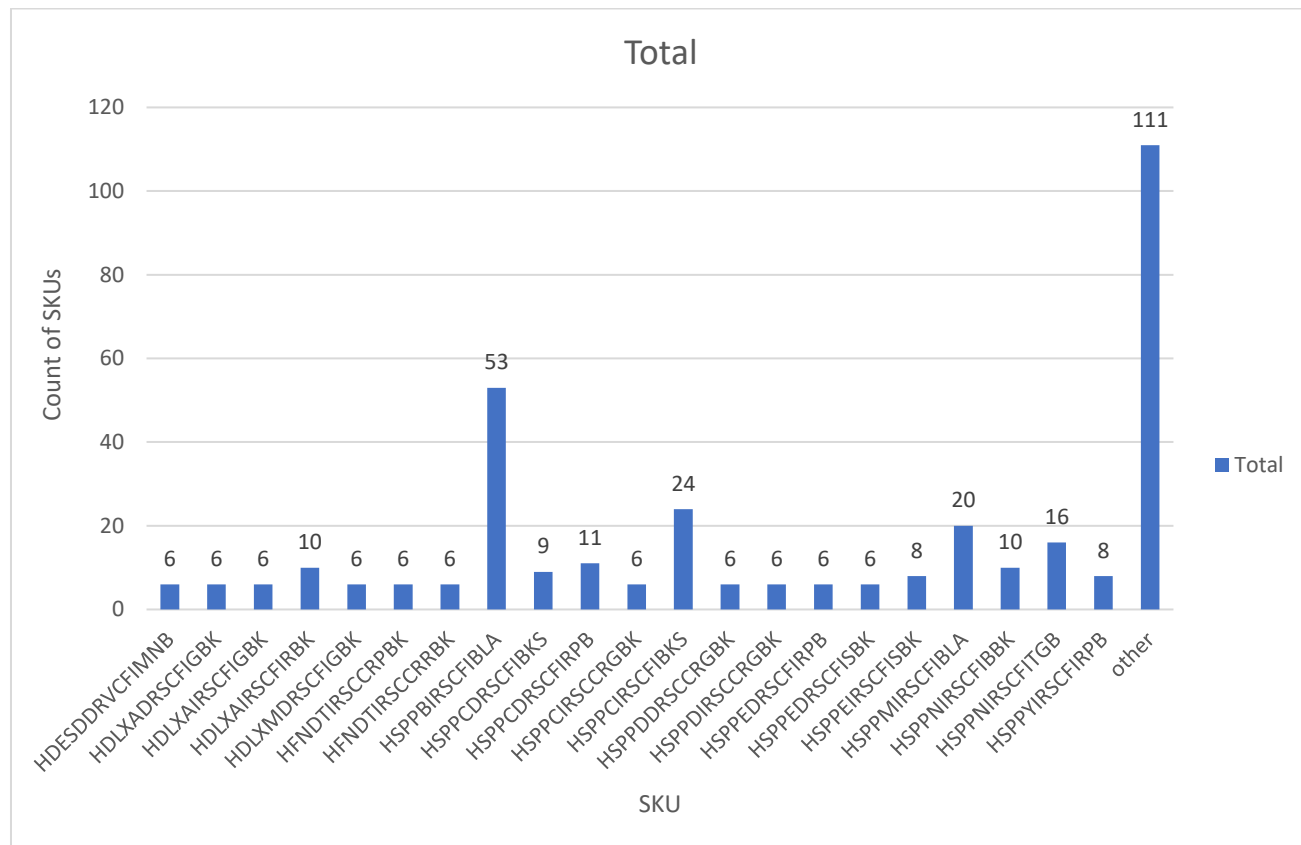

Figure 4: describes SKU selling

The SKU with the highest sales volume for the year 2022 is the 'SPLENDOUR + I3S BS6 FI DRUM SELF CAST BLACK AND ACCENT', labeled as 53-stack HSPPBIRSCFIBLA. The price of this bike fluctuates every few months, and it generates a total revenue of Rs. 3536211.52. 16.26% of this revenue is derived from the mentioned SKU, indicating the importance of keeping an adequate stock of it in the showroom.

HSPPCIRSCFIBKS, which stands for "SPLENDOUR + BS6 I3S DRS CAST BLACK SILVER," is the second most popular SKU out of 24. This SKU generated Rs. 1629285.19 in revenue, which is 7.5% of the total. Thus, attention should be given to HSPPCIRSCFIBKS following HSPPBIRSCFIBLA showroom.

Based on colour of bike:

Bike color analysis

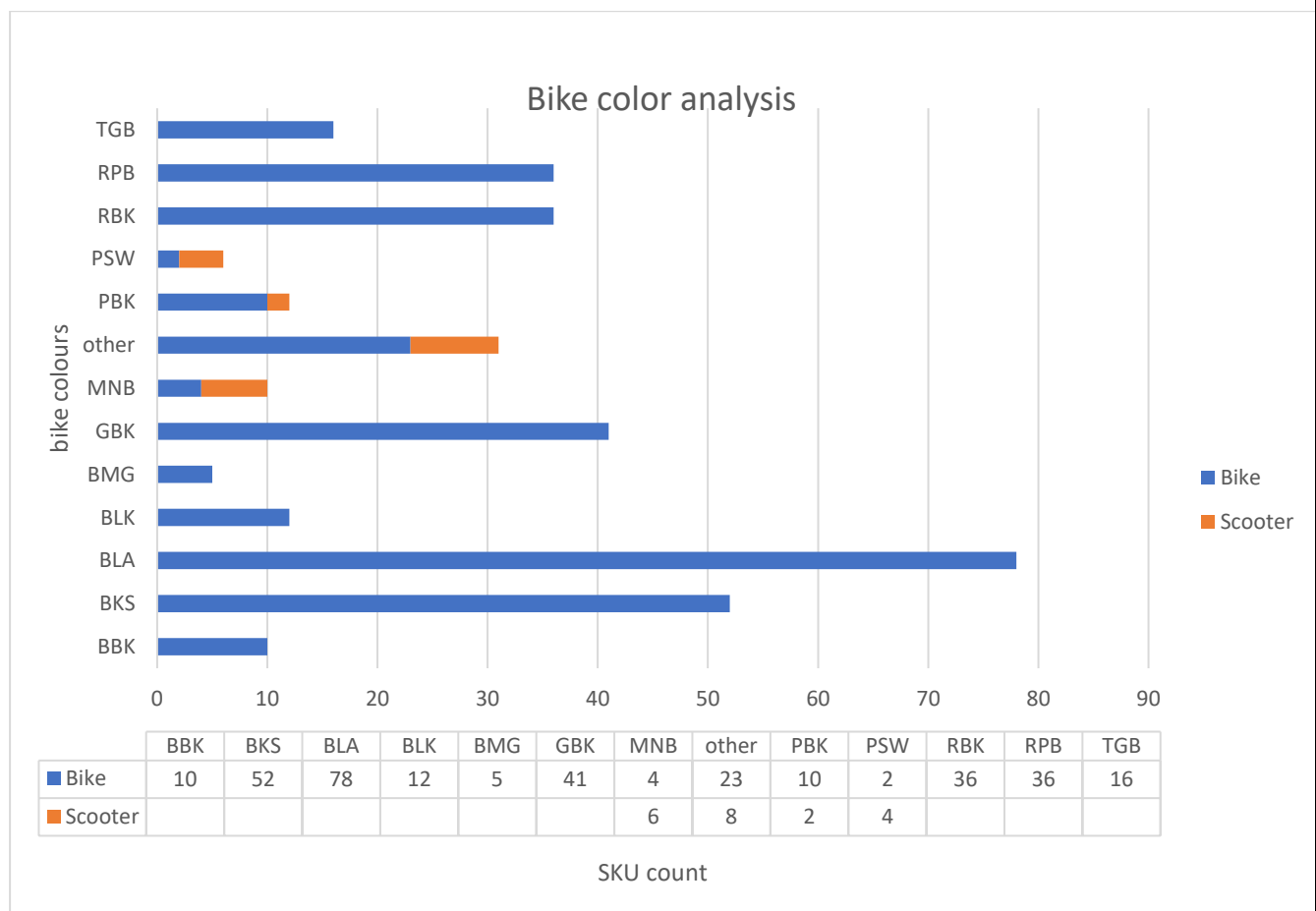|	BBK	BKS	BLA	BLK	BMG	GBK	MNB	other	PBK	PSW	RBK	RPB	TGB
Bike	10	52	78	12	5	41	4	23	10	2	36	36	16
Scooter							6	8	2	4			

SKU count

Figure 5: Colour wise selling of bikes and scooters

Sales depending on various bike hues are seen in the above bar graph. Selling fewer than five is categorised under the "other colour" category. BLA (black accent) is the bike colour that sells the most—78. Customers like BLA's coloured motorcycles, then. Following that, BKS (black silver) sells the most. Additionally, GBK, RPB, and RBK sell coloured bikes well. Some bike colours, such as BFS, BGL, BHG, BKB, BKG, BKP, BRD, CBR, FSV, FWT, HGB,

MAG, MSG, MVG, NRD, and SRD, sell very poorly, hence they are categorised under a different heading.

The graph also depicts the sales of scooters according to their colours. However, the graph shows that only 8 other scooters and MNB (metallic nexus blue), PBK (purple black), and PSW (pearl silver white) colour scooters are sold. There are extremely few people. And not many scooters made by Colour are being sold. As a result, the showroom can concentrate on colours of scooters and bikes that sell the best.
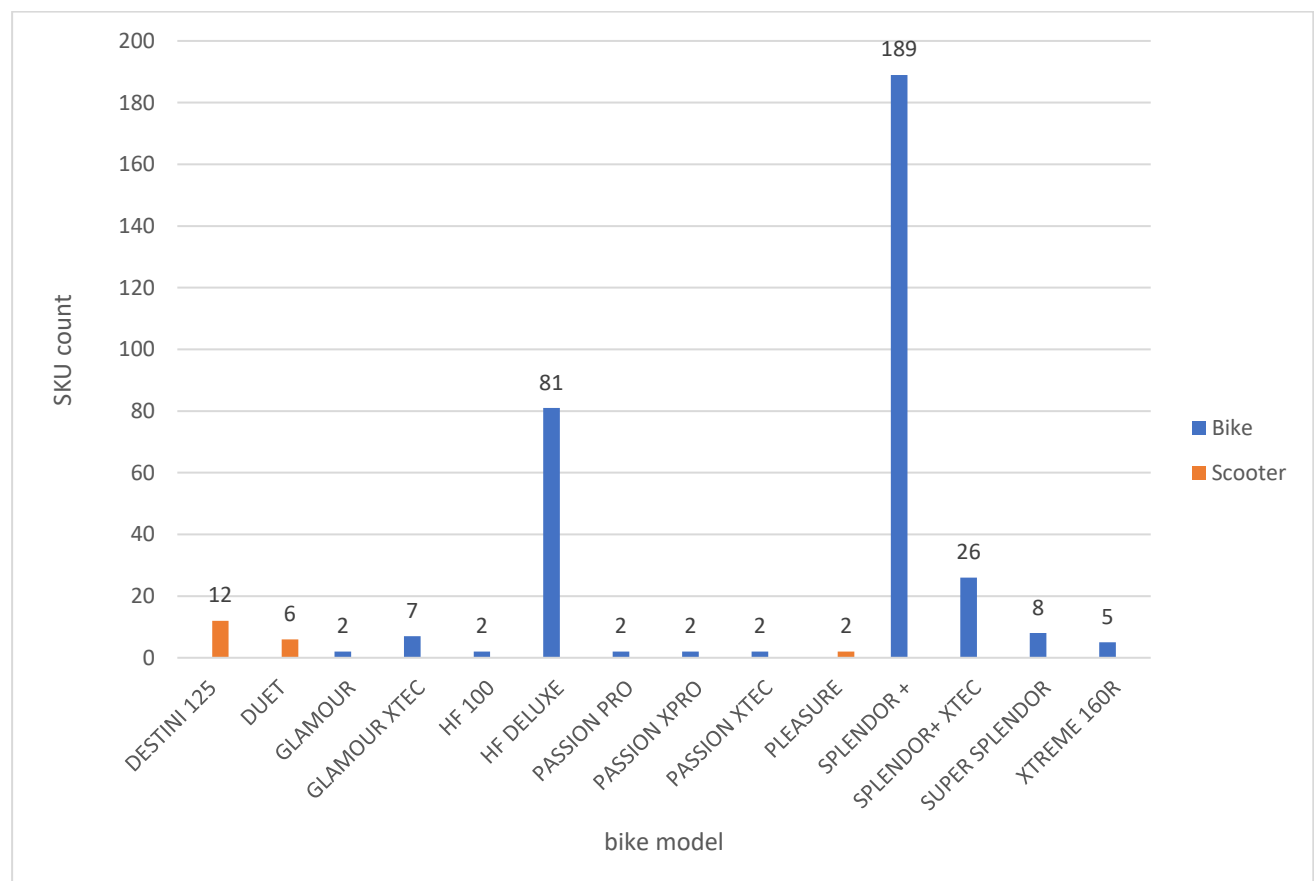
Based on Bike and scooter models:

Figure 6: Bike model selling

The columns "bike model", "SKU" and "vehicle type" are used to illustrate the graph. This graph can be used to identify the most popular bike and scooter models. The graph clearly demonstrates that "SPLENDOUR +" is the most popular bike sold in 2022, followed by the HF DELUXE and SPLENDOUR+

XTEC. Selling scooter models are represented by an orange bar. which DESTINI 125 saw the most sales.

Online research reveals that the HF DELUXE and SPLENDOUR PLUS are basic bikes that are primarily utilised by farmers in small towns. This investigation has revealed that the showroom should only highlight these bikes, not contemporary sports bikes.

Overall Findings:

From overall analysis, showroom should focus on scooters selling as there is very low selling of scooters compare to bikes. 'Vadali' is target area for the showroom as 51% of the selling is from Vadali. Showroom should be active in the month of October and May as in these 2 months showroom can get the good amount of profit. BLA and BKS are the colours, which are mostly choose by the customer. HF DELUXE and SPLENDOR + these two are the most selling bike models.

Interpretation of Results and Recommendations

There are numerous recommendations derived from the analysis of showroom data. Below are the recommendations from the project:

- The showroom needs to have ample inventory in the months of October and May, when bike sales are at their highest due to holidays and travel as well as festivals like Navratri, Dashera, and Diwali.
  (Figure 1)

- A considerable amount of income is produced in the months of May and October, allowing showrooms to make a good profit in these months. Since sales are slow in the beginning months of January and February, showrooms should concentrate on marketing their locations and various bike models during these months.
  (Figure 3)

- Vadali has the largest sales of bikes among the locations, hence the showroom should concentrate on other regions with lower sales. The owner of that showroom may employ salespeople so that the showroom can be promoted. Because of this showroom's connections with smaller car shops and showrooms, its network can expand in less popular selling areas.
  (Figure 2)

- To attract more customer showroom should organize free camps for bike service in 1 time in 3 months. For customer first 2 service should keep free.

- The highest selling SKUs, HSPPBIRSCFIBLA and HSPPCIRSCFIBKS, should have enough stock to keep in the showroom, according on analysis of the various SKUs' sales. In order to prevent loss, the customer shouldn't have to wait for the bike. Instead, they should receive the bike immediately. Customers will be more satisfied as a result.

- The hue of the bike is significant for bike sales because if the customer's preferred bike colour is available, they will buy it then and the number of bikes sold will rise. Black accent and Black silver are popular bike colour. The proprietor of the showroom should purchase certain colours of bikes

more frequently than other colours. Less inventory should be kept in order to sell fewer coloured bikes.

- Since the HF DELUXE and SPLENDOUR + are the two bike models with the largest sales in 2022, dealerships should keep enough stock of these two models on hand. Model type therefore plays a crucial impact in the sale of motorcycles.

- Some bike models are less popular; thus, showrooms might set up test rides for those bikes so that customers can get an idea of new bike models, increasing the likelihood that they will buy scooters or bikes that are less popular like GLAMOUR, HF100, PASSION PRO etc.

- The sale of scooters is extremely low, so there are a number of ways to boost sales, such making a special offer or providing a little discount. Scooters are marketed to women or girls; thus, marketing efforts should reflect that.