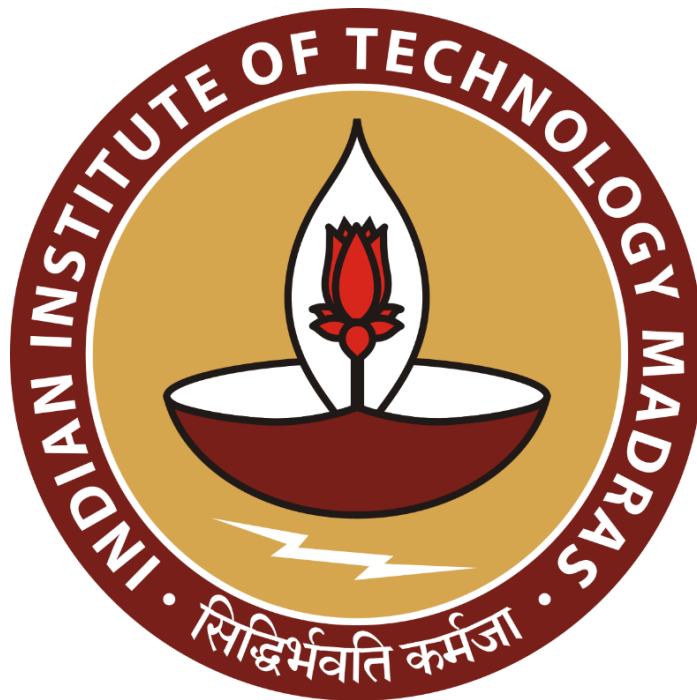


# **Employing Data Driven Strategies For Optimizing Profitability and Customer Acquisition in a Call Taxi Franchise.**

**Final report for the BDM capstone Project**

Submitted by

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# 1 Executive Summary

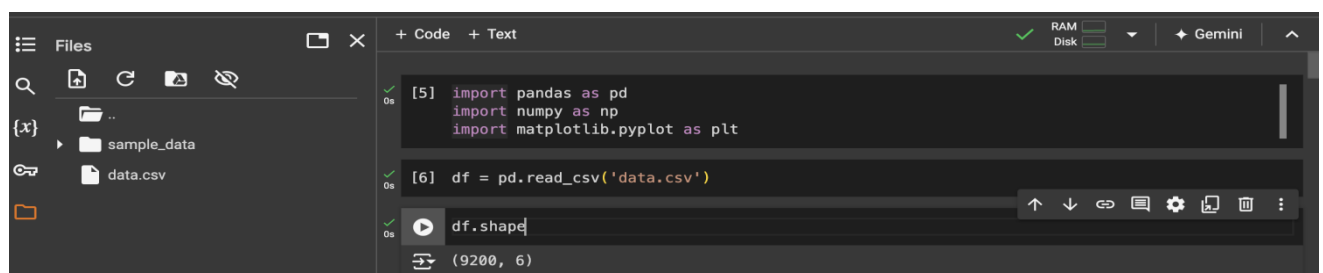
Fast track is a call taxi franchise which operates in many major cities across India and this project is done for the Thoothukudi branch of the franchise. The franchise's manager Mr. James Dildon wants to make his franchise get ahead of its competitors in the market, gain more customers and invariably gain more income. The issues faced were addressed by analyzing the provided booking data from January 2024 to June 2024 using python libraries like pandas, numpy which were used for data storage, performing EDA and libraries like seaborn, matplotlib for visualization also, certain visualizations were done using pivot tables and charts from excel and pareto charts which were created by python. The main insights obtained from the analysis was that the **outstation bookings** had been the main contributor for the income and **weekends(Saturday, Sunday)** have yielded more income than the rest of the days. Also the trend analysis revealed increased revenue in certain months due to seasonality. Visualizations like pareto analysis and bar charts had given us some clarity to provide suggestions by analyzing the outperforming products using Excel tools, recommendation , marketing strategy and data-driven decisions to optimize revenue generation can be formulated and that could help Fast Track Thoothukudi find its feet in the market and improve its income.



## 2 Detailed Explanation of Analysis Process

The data provided from the franchise for analysis contains details of bookings that were done in the six month span from January 2024 to June 2024. The data was not ready for analysis and wasn't structured so it was cleaned, organized before using it for analysis. The data was collected in excel and then python libraries like pandas, numpy were used to clean and capture the data. The EDA was done as follows.

**Data collection:** The first step in the data analysis is data collection and the raw data. It contained as many as 11 columns and 9200 rows(bookings) only the necessary columns were kept and the rest were removed whereas the whole of 9200 rows were taken for analysis. Also, there were no missing records in the obtained dataset so imputation was not needed. The selected columns were stored as a pandas dataframe and then the 'Pickup Date' was transformed to datetime format and split into months and days for performing analysis. The final shape of the dataset used is as follows:



```
[5] import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

[6] df = pd.read_csv('data.csv')

df.shape
(9200, 6)
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9200 entries, 0 to 9199
Data columns (total 4 columns):
#   Column          Non-Null Count  Dtype  
---  -
0   Booking mode    9200 non-null  object  
1   Pickup Date     9200 non-null  object  
2   Booking Type    9200 non-null  object  
3   Amount          9200 non-null  float64  
dtypes: float64(1), object(3)
memory usage: 287.6+ KB
None
```

	Booking mode	Pickup Date	Booking Type	Amount
0	Phone	31/12/2023	outstation	9560.0
1	Phone	01/01/2024	outstation	1009.0
2	Phone	31/12/2023	localtrip	187.0
3	Phone	01/01/2024	package	120.0
4	Phone	01/01/2024	localtrip	157.0

```
count    9200.000000
mean      806.059107
std      1182.954750
min         0.000000
25%       120.000000
50%       290.000000
75%      1164.250000
max     36840.000000
```

**Data aggregation:** The aggregation is done for amount collected on the basis of booking types, days, months also to understand the trend of booking, the data was aggregated based on number of bookings done on different days of the week also the different types of bookings done on the different days of the week.

**Descriptive Statistics:** The exploratory data analysis of the data gave some good insights. Python and pandas dataframe was used to get the minimum, maximum, average amount collected etc and the descriptive statistics gave us some more detailed info and provided us the numbers for us to analyse, draw conclusions and make predictions for future.

**Data Visualization:** The visualizations were made primarily with the help of pivot tables and excel. The pareto charts and some more charts were prepared with the help of python libraries such as pandas, matplotlib, seaborn.

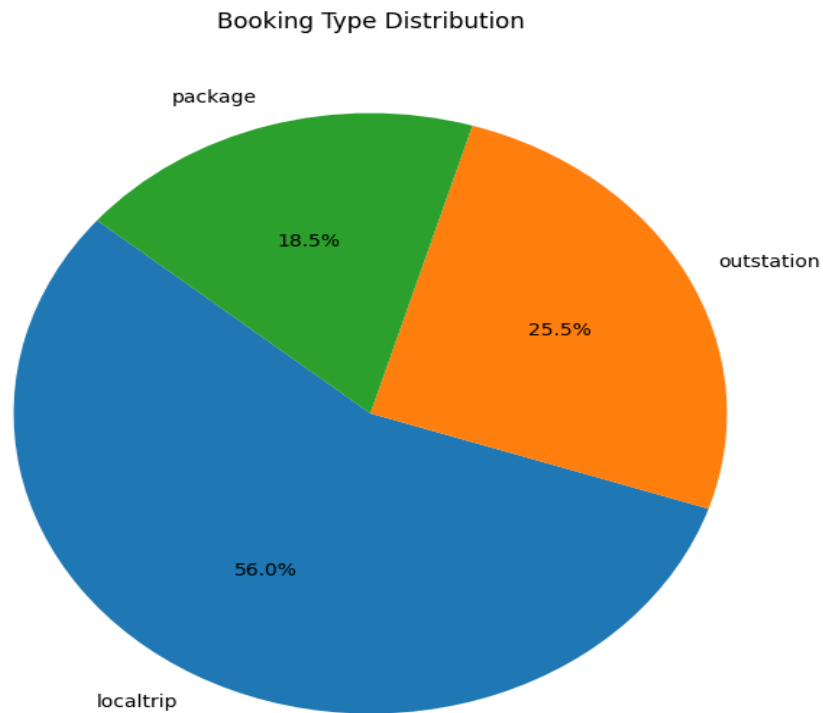
### 3 Results and Findings

The obtained booking data was then used to generate the following charts, graphs, tables to understand the trends in booking, revenue's major contributors and that will ultimately help us with providing suggestions to increase the income.

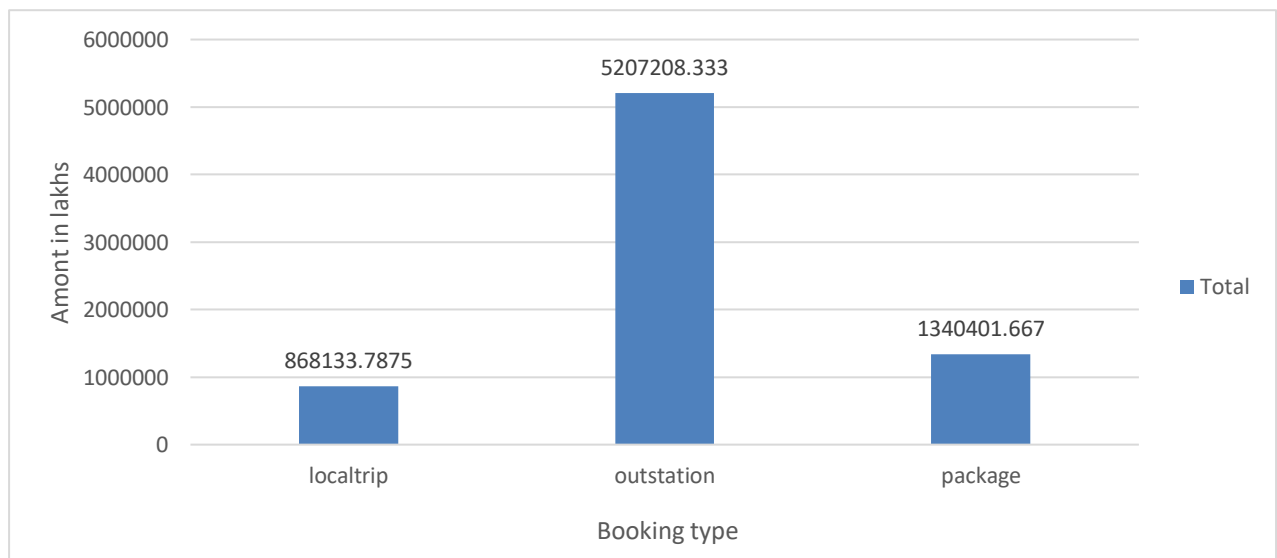
#### 3.1 Findings from booking types:

Booking Type	Count of Bookings based on Type
localtrip	5149
outstation	2348
package	1703
Grand Total	9200

*table 1 : Table for summarizing bookings based on types*



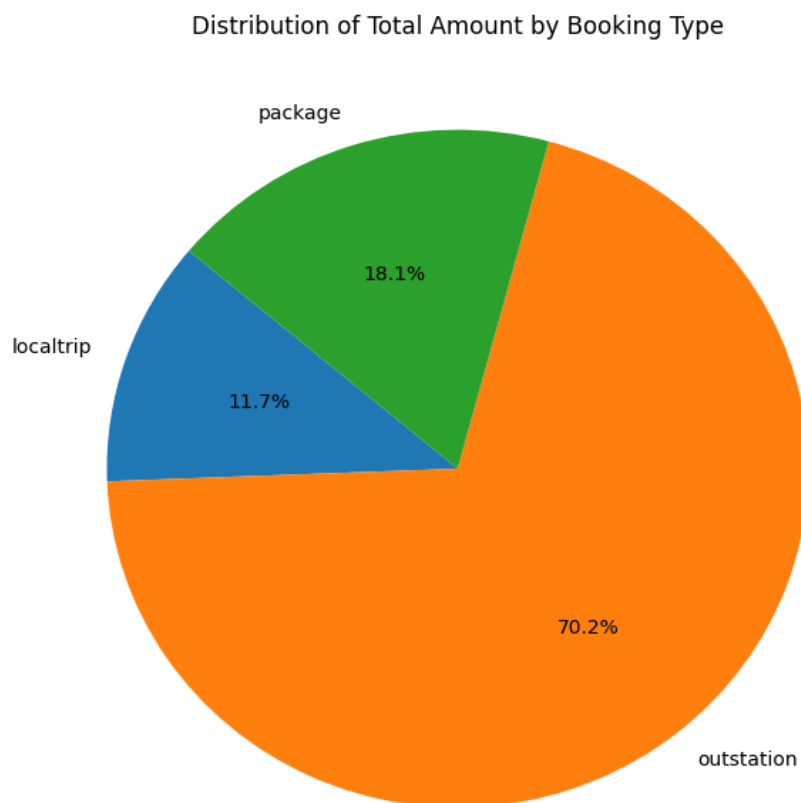
*figure 1 : Pie chart for distribution of booking type*



*figure 2 : Bar chart for the total amount collected based on booking type*

- Using the above table(table 1) and charts(figure 1, figure 2), we can see that the outstation bookings has yielded the maximum revenue to the franchise - ₹ 52,07,208 and the count of outstation booking is 2348 and the average revenue per outstation booking is ₹ 2218 and the average distance booked in a outstation trip is 149km. Additionally the outstation booking corresponds to 25.5 % of the total bookings that were done in the 6 months.

- Similarly the second best revenue was yielded by packages - ₹ 13,40,402 and the number of packages that was booked is 1703, had contributed to 18.5 % of the total bookings and it gave an revenue of ₹ 787 on an average and the average distance booked is 37km.
- And finally the local trips had yielded an revenue of ₹ 8,68,134 and had a booking count of 5149 and an average revenue of ₹ 169 per trip the local trips have been booked the most and corresponds to 56% of the total bookings done and the average distance booked is 6km.



*figure 3 : pie chart for the total contribution to revenue*

- From the pie chart in figure 3, we can get to see the shares of revenue contributed by different booking types to the overall revenue and we could see that the outstation bookings have the major share of 70.2 % which is then followed by packages which has contributed to 18.1% of total revenue and then finally the local trips which contribute the least at 11.7%. The data is now broken down to months data, days of the week data and then analyzed for getting further insights.

### 3.2 Month wise findings:

Month	Sum of Amount	Number of Local Trips	Average Amount per local trip
Jan	145563.3	831	175.166426
Feb	142954.7	842	169.7799287
Mar	140844.7	838	168.0724344
Apr	125882.85	761	165.4176741
May	158212.7	972	162.7702675
Jun	154675.5375	905	170.9121961
<b>Grand Total</b>	<b>868133.7875</b>	<b>5149</b>	<b>168.6024058</b>

table 2 : Table for month wise stats of local trips

- The local trips seem to be the most consistent of all the booking types as the average amount per trip is almost the same throughout the 6 months but can be seen a bit higher in the month of January but the number of trips and amount collected seem to be high in the months of May and June.

Month	Sum of Amount	Number of Outstation Trips	Average Amount per outstation trip
Jan	789525.3333	381	2072.244969
Feb	723336	325	2225.649231
Mar	806136.1667	369	2184.650858
Apr	814200.1667	364	2236.813645
May	1066487.167	485	2198.942612
Jun	1007523.5	424	2376.23467
<b>Grand Total</b>	<b>5207208.333</b>	<b>2348</b>	<b>2217.720755</b>

table 3: Table for month wise stats of outstation trips

- The outstation bookings are the most revenue generating ones and they too seem more consistent throughout and has gone slightly ahead of the average in the month of June and similar to local trips, the number of trips and amount collected are high in the months of May and June.

Month	Sum of Amount	Number of Package Trips	Average Amount per package
Jan	183110.6667	242	756.6556474
Feb	192456.6667	254	757.7034121
Mar	177555	230	771.9782609
Apr	214272	265	808.5735849
May	304998.3333	385	792.2034632
Jun	268009	327	819.5993884
<b>Grand Total</b>	<b>1340401.667</b>	<b>1703</b>	<b>787.0825993</b>

table 4 : Table for month wise stats of packages

- The package booking has been seen to increase significantly in the months of May and June and the average amount collected has been only increasing as the months progress and yet again the number of trips and amount collected seem to be high in the months of May and June.



Month	Total Sum of Amount	Total Count of Bookings	Average Amount per trip
Jan	1118199.3	1454	769.0504127
Feb	1058747.367	1421	745.0720385
Mar	1124535.867	1437	782.5580144
Apr	1154355.017	1390	830.471235
May	1529698.2	1842	830.4550489
Jun	1430208.038	1656	863.6521966
<b>Grand Total</b>	<b>7415743.788</b>	<b>9200</b>	<b>806.0591073</b>

table 5 : Table for month wise stats of all booking types combined

- From the above tables of different booking types the observed common factor is that the number of bookings and the amount collected have been increasing significantly in the months of May and June. From table 5, we can get the inference that **the revenue has increased by 37.3% in May and by 28.4% in June** than the average revenue of the first 4 months.
- Also, the **number of bookings has increased by 29.2% in the month of May and 16.17% in the month of June** than the average booking count of the first 4 months

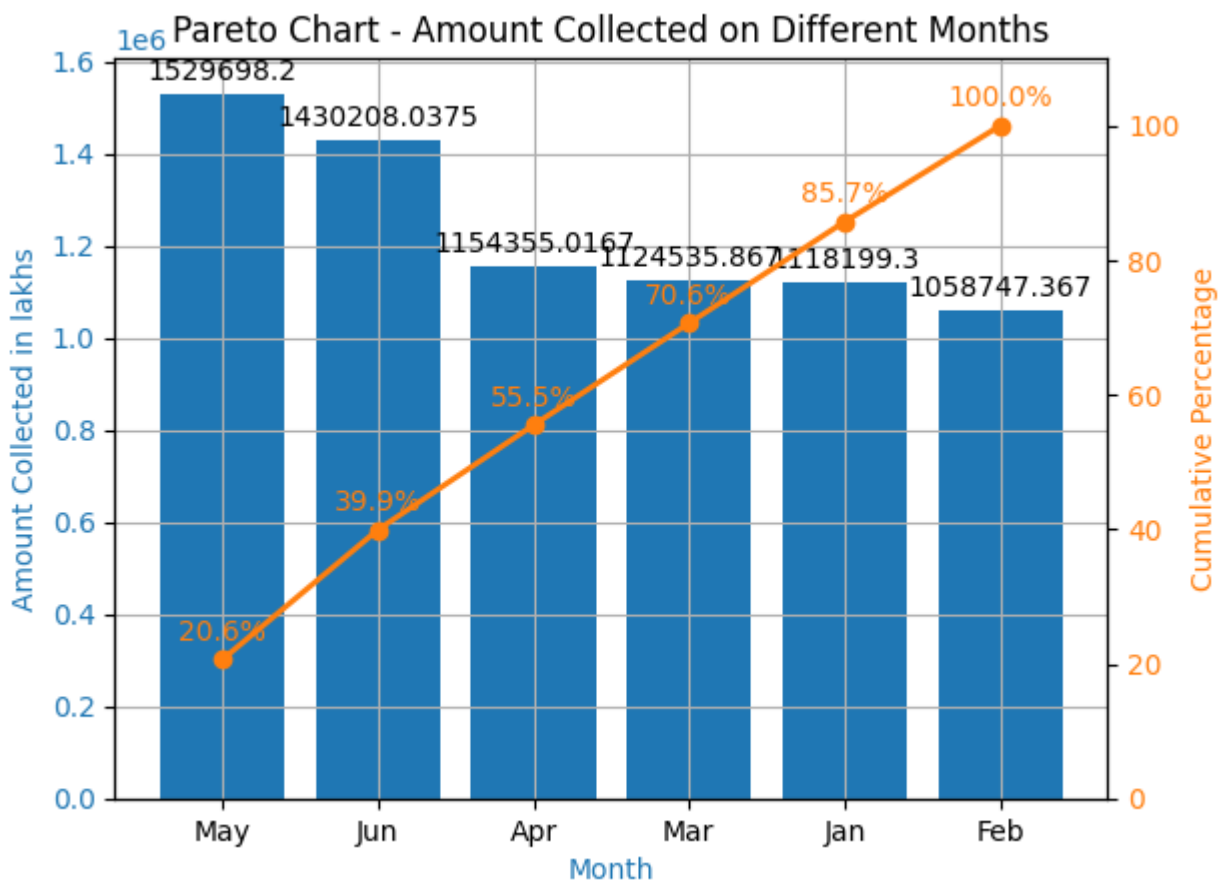
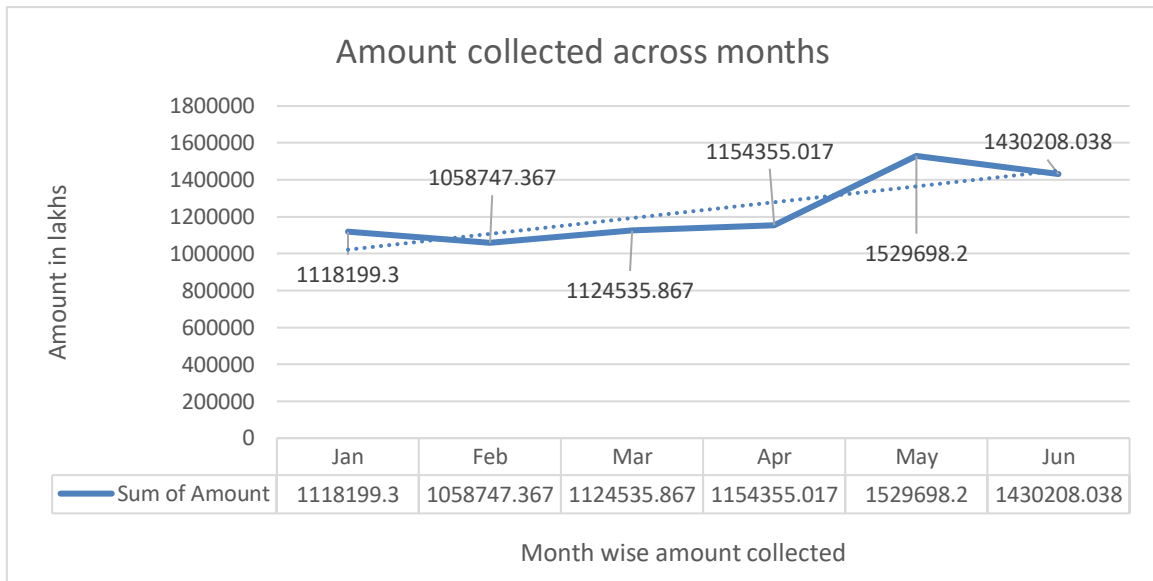


figure 4 : Pareto chart for month wise revenue

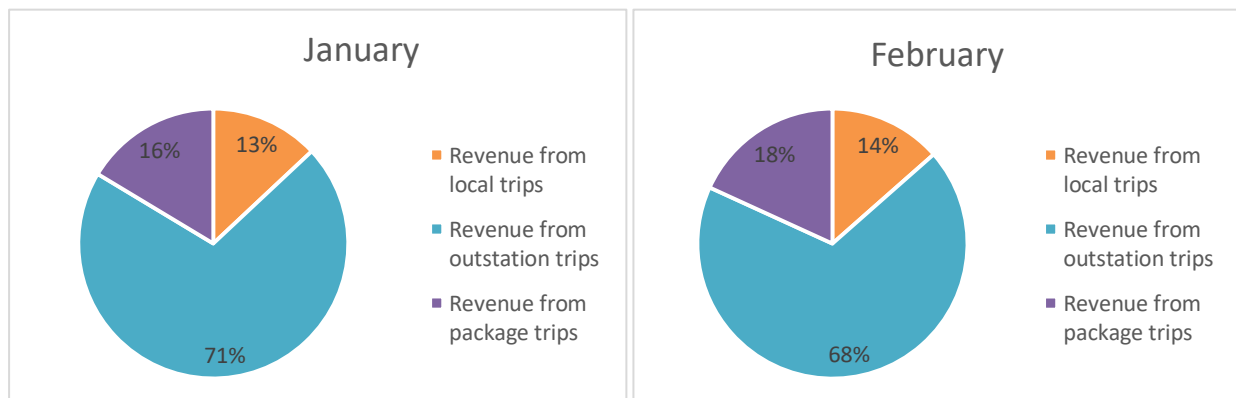


*figure 5 : line chart for month wise revenue collected*

- The pareto chart in figure 4 shows the difference in revenue of the last 2 months from the rest of the months and the trend-line in figure 5 shows the trend of revenue collected over the 6 months and that too shows a spike and an increase in revenue in the last 2 months.

Month	Revenue from local trips	Revenue from outstation trips	Revenue from package trips	Grand Total
January	145563.3	789525.3333	183110.6667	1118199.3
February	142954.7	723336	192456.6667	1058747.37
March	140844.7	806136.1667	177555	1124535.87
April	125882.85	814200.1667	214272	1154355.02
May	158212.7	1066487.167	304998.3333	1529698.2
June	154675.5375	1007523.5	268009	1430208.04
<b>Grand Total</b>	<b>868133.7875</b>	<b>5207208.333</b>	<b>1340401.667</b>	<b>7415743.79</b>

*table 6: Table for contribution of different booking types for monthly revenue*



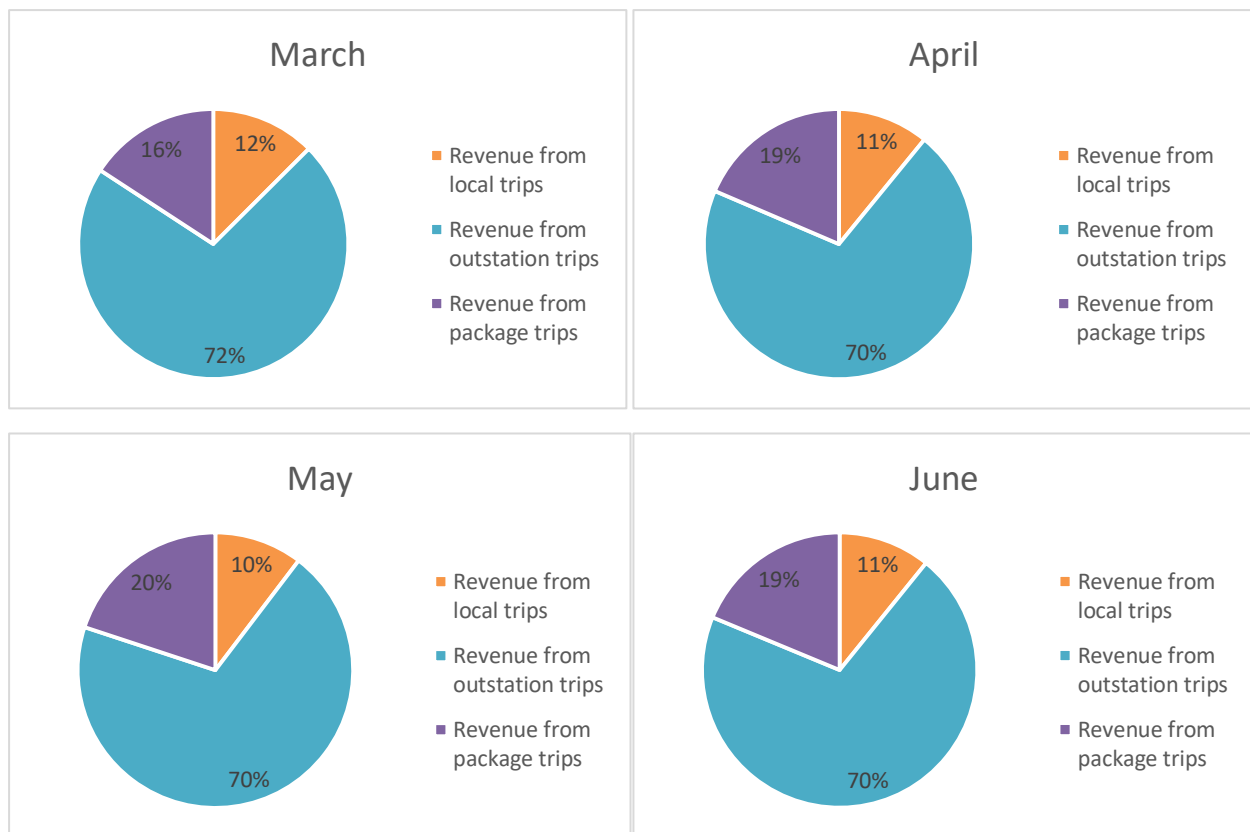


figure 6: Pie chart for the distribution of contribution of revenue for months January to June

- From table 6 and figure 6, we can find the contribution of the three booking types towards the revenue of months January 2024 to June 2024 and here we could see that the contribution of the booking types remains consistent though the collected amount varies across the months with outstation bookings contributing 70% in all months except for February where the local trips have performed a bit better than it's average. So, this indicates that in months that has high revenue, all types are bookings have increased collectively increasing the revenue and was not due to any individual bookings outperforming.
- Now we have a clear picture of the booking type that yields the most revenue and the months in which we get the most revenue and bookings. So, now the next goal is to find out the most revenue generating days of the week and the number of different types of bookings done in a day wise manner.

### 3.3 Day wise findings:

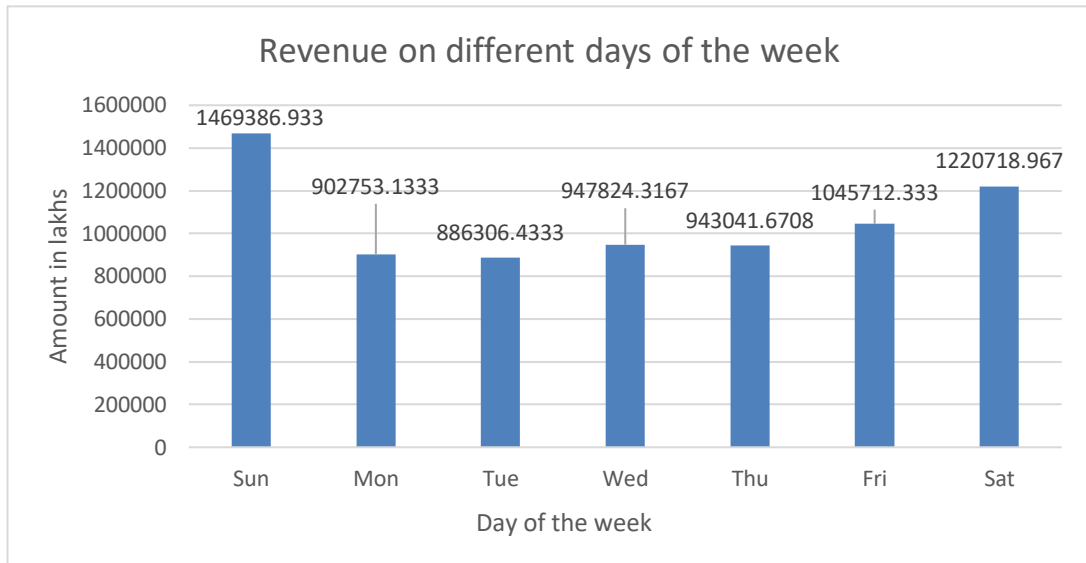


figure 7 : Bar chart summarizing the revenue on different days of the week

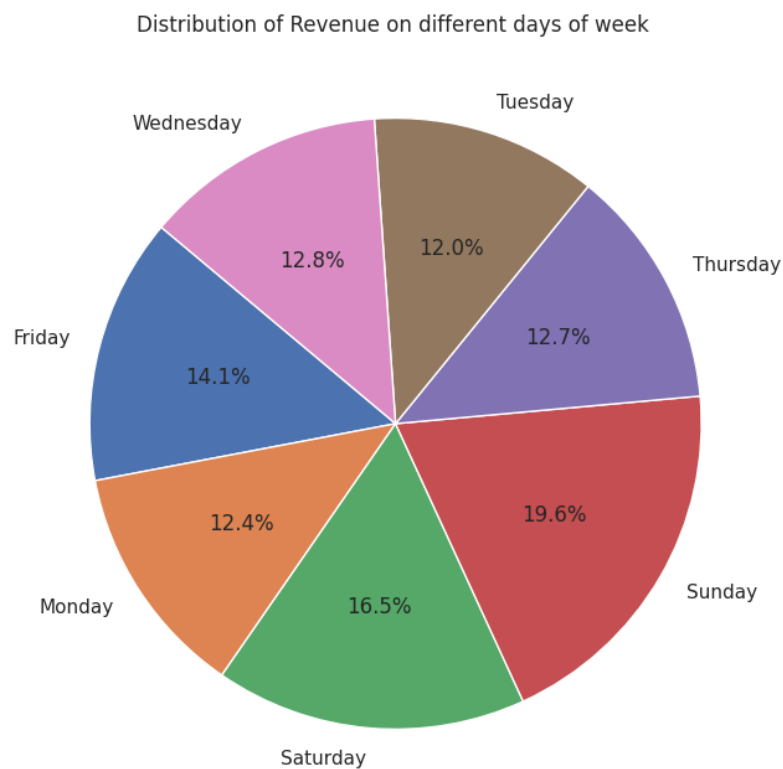


figure 8 : pie chart showing distribution of revenue on different days of the week

- From the above figures 7 and 8, we have can see that the end of weekend days- Friday, Saturday and Sunday contribute to approx 50% of the total revenue and the rest of the days have almost similar distribution in their contribution to revenue.

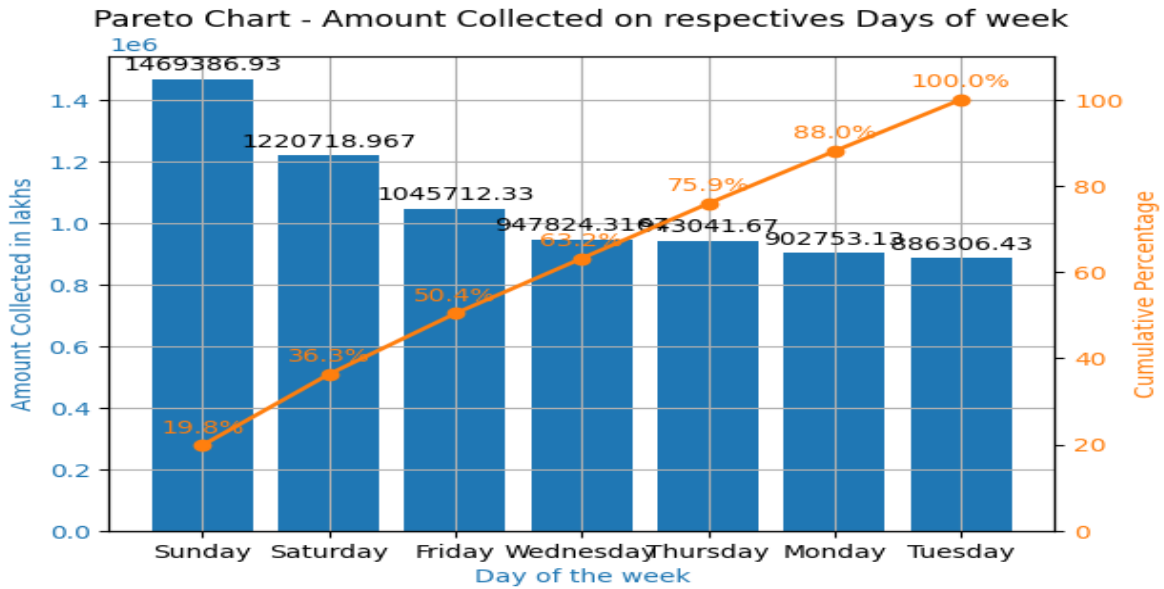


figure 9 : Pareto chart for the total amount collected on different days of the week

- The pareto chart in figure 9 gives a better picture of the the contribution revenue and it proves what we was stated in the above point. So the inference is that the weekends have been more revenue yielding particularly **amount collected on Sunday is 48% higher** than the average amount collected in the other 6 days.

Booking Type	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
localtrip	96334.1	120960.8	124960.6	137095.15	138826.8375	127641	122315.3
outstation	1209641.5	614455.3333	559394.8333	591902.1667	587689.8333	732538.6667	911586
package	163411.3333	167337	201951	218827	216525	185532.6667	186817.6667
Average amount(₹)	1167.106381	739.9615847	687.5922679	685.3393468	691.3795241	772.3133924	917.1442274
Total amount in lakhs	1469386.933	902753.1333	886306.4333	947824.3167	943041.6708	1045712.333	1220718.967

table 7 : Table summarizing the amount collected on different days of the week for each booking type

- From the above table 7, we can see that the amount collected has been split up based on the bookings and we can see that there is a heavy increase in the outstation revenue on Sunday the increased average too supports the analysis. Also outstation seems to yield more revenue in all days of the week which is expected from the analysis done above.
- Figure 10 shows the number of combined bookings done on different days of the week and the number of bookings seem to be increasing at the start of the week, peaks during the mid week(Wednesday) and then it gets slightly decreased as we move towards the end of week.

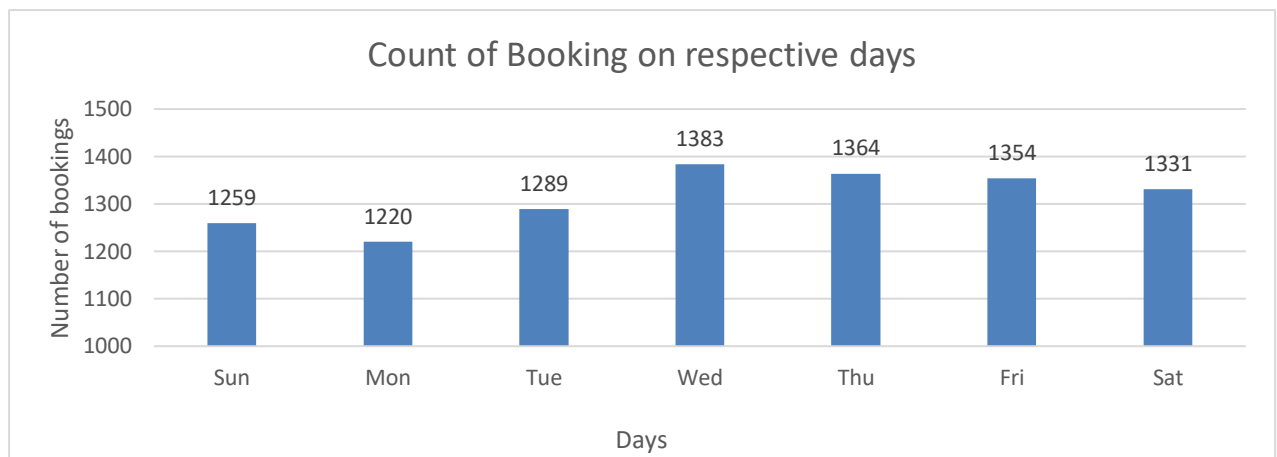


figure 10 : Bar chart for number of bookings made on different days of the week

Booking Type	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Grand Total
localtrip	527	714	752	833	821	780	722	5149
outstation	527	286	281	276	275	341	362	2348
package	205	220	256	274	268	233	247	1703
<b>Grand Total</b>	<b>1259</b>	<b>1220</b>	<b>1289</b>	<b>1383</b>	<b>1364</b>	<b>1354</b>	<b>1331</b>	<b>9200</b>

table 8 : Table for the number of different booking types on each day of the week

- Table 8 shows the different types of booking on different days of the week and we could see that the local trips are the most booked in all days of the week as expected. Also, the outstation bookings are done more towards the end of week (Friday, Saturday, Sunday) and there is a drastic increase in outstation bookings on Sunday which explains the increased revenue collected on that day.

### 3.4 Findings from expenses:

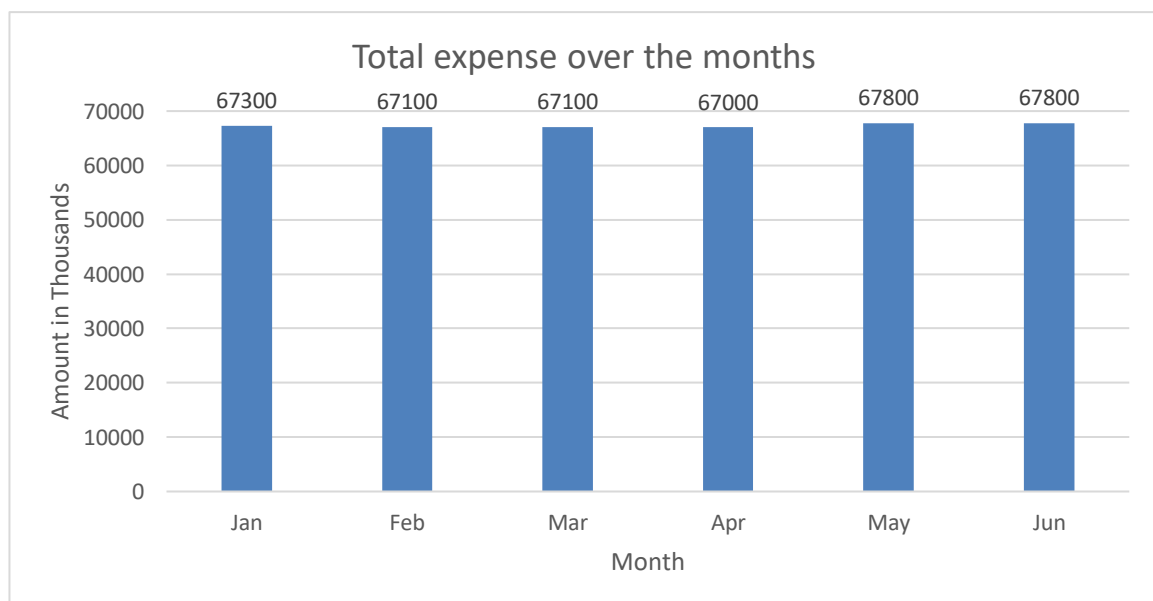
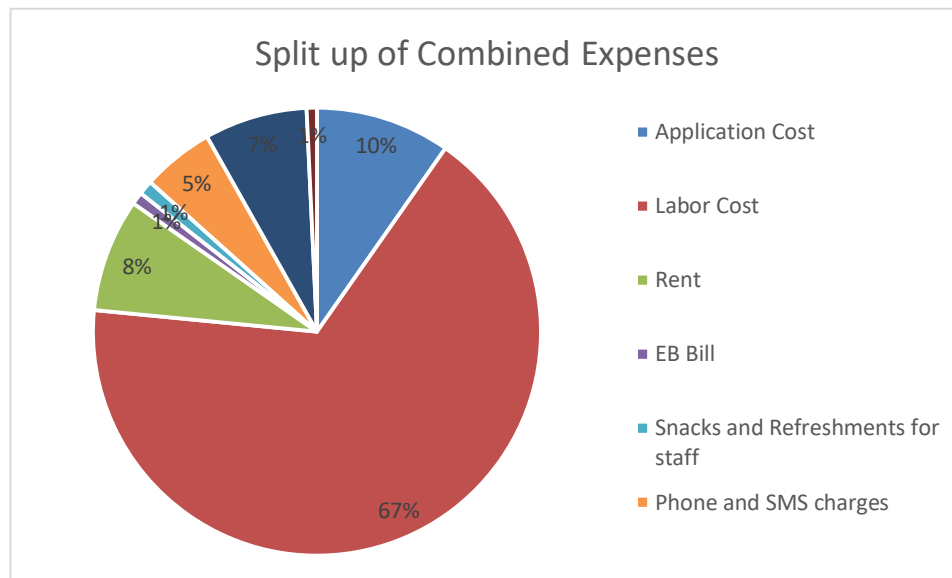
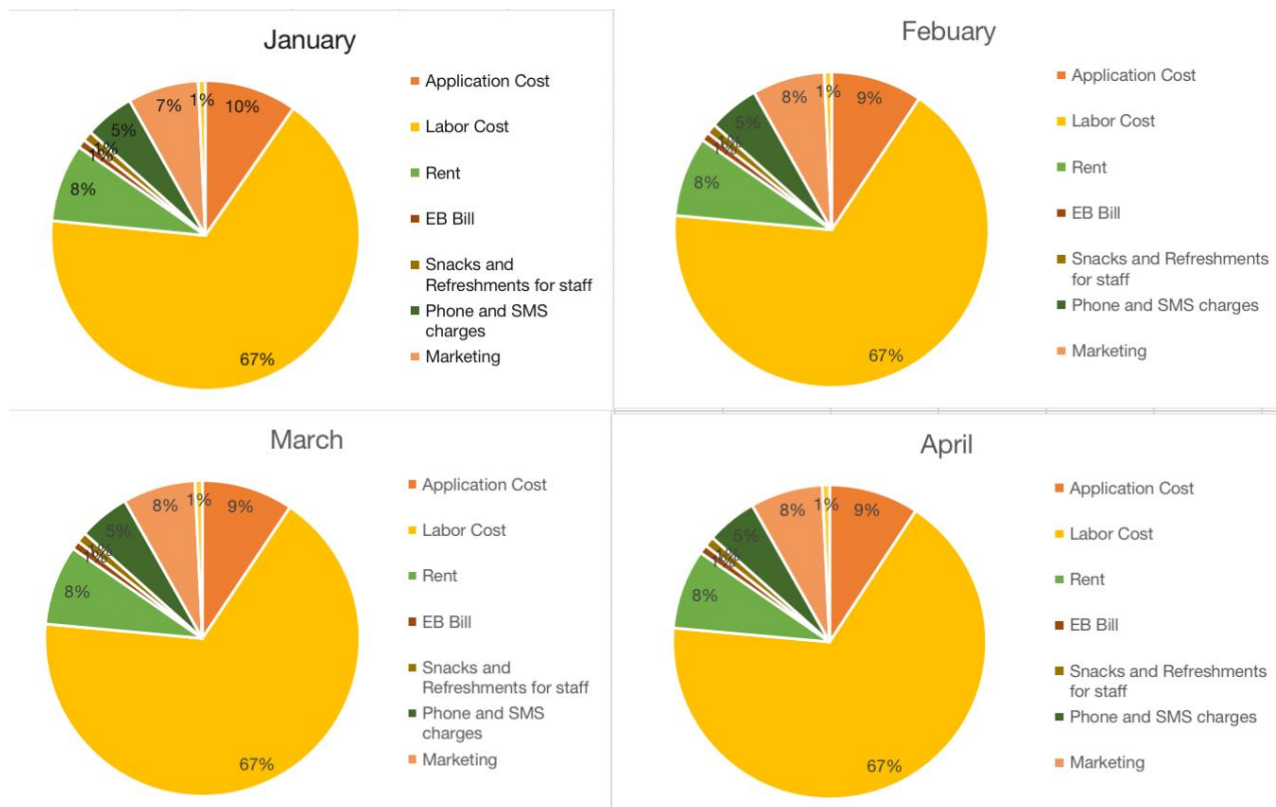


figure 11 : bar chart for total expenses over the 6 months

- The expenses data is analyzed to look out for areas where the expense can be optimized and that too will help in increasing the income. From figure 11, we can observe that the expense to the franchise remains constant averaging at ₹67,350.



*figure 12 : pie charts for split up of all expenses combined*



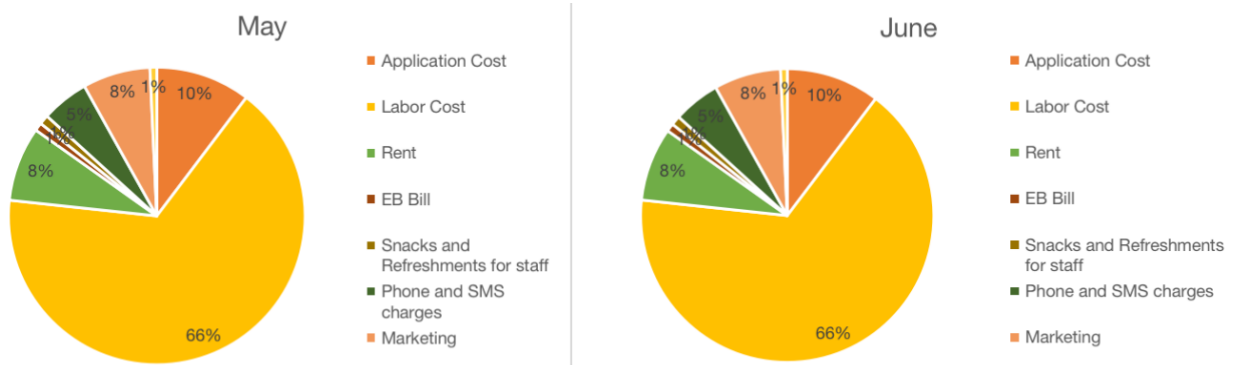


figure 13 : pie charts for month wise expenses split up

Month	Application Cost	Labor Cost	Rent	EB Bill	Snacks and Refreshments for staff	Phone and SMS charges	Marketing	Stationery Equipments
Jan	6500	45000	5500	600	700	3500	5000	500
Feb	6300	45000	5500	600	700	3500	5000	500
Mar	6300	45000	5500	600	700	3500	5000	500
Apr	6200	45000	5500	600	700	3500	5000	500
May	7000	45000	5500	600	700	3500	5000	500
Jun	7000	45000	5500	600	700	3500	5000	500

table 9 : Table containing the whole of expenses

Type of Expense	Application Cost	Labor Cost	Rent	EB Bill	Snacks and Refreshments for staff	Phone and SMS charges	Marketing	Stationery Equipment
Total(₹)	39300	270000	33000	3600	4200	21000	30000	3000

table 10 : Table for the combined expenses for 6 months

- From figure 12 we can see that the major contributor to the expense is the Labour cost contributes to 67% of the total expense and from figure 13 we can see the month wise split up of the expense and that seems to be almost identical which means that there is no additional expense in the period of 6 months.
- The EB bill might change based on usage and then the application cost too differs based on the volume of bookings as seen in table 9, the application cost has increased in the months of May and June as the number of bookings are high as seen in table 5.



## 4 Interpretation of Results and Recommendation

From the analysis of the received data of 6 months in the time period of January 2024 to June 2024 and based on the conversation with the manager of the franchise, we can now draw conclusions and inferences from the results obtained and graphs that were prepared.

### 4.1 Inferences from the results:

The analysis from booking types is as follows,

- The local booking is the most booked one but generates the least revenue and averages an amount of ₹169 which is the least when compared to the other two booking types. This is understandable as the distance travelled will be less and so it is less likely to contribute much but on the brighter side, people who tend to use local trips are most likely to be regular customers and so they do help in building the customer base that the franchise is expecting to build.
- Next is the outstation booking which might not have the same number of bookings as that of local trips, but has bookings almost 45% the volume of local trips booked. Averaging at ₹2218 this booking type is the major source of the franchise's revenue and its volume in booking has a direct impact in the revenue for that month.
- And finally the packages, the packages are the least booked but still have great value when it comes to total revenue collected averaging at ₹787 and also has a way better average amount collected and distance booked. This booking type is one of the fast growing type and the count of bookings has been on the rise from the beginning of the year.

From the month wise analysis we get the following insights,

- The number of all booking types **does show seasonal increase in the months May and June** which is due to the summer holidays for schools and colleges therefore resulting in more number of bookings and hence increased revenue.
- This behaviour has helped the franchise to increase its revenue by 37 % in the month of May and by 23% in the month of June than the average income of the first 4 months. This sudden increase in the income is a direct effect of the above mentioned point.

- Also the number of bookings(all booking types) has increased by 29.2% in the month of May and 16.17% in the month of June than the average booking count of the first 4 months

Insights from Day wise analysis is as follows,

- The day wise analysis gave us some interesting numbers as we are now able to understand deeper into the major source of revenue to the franchise. The number of bookings of and the average amount collected on different days of the week gave us the information that the both booking and the average is on the higher side on weekends (Saturday and Sunday).
- The previous analysis had given us an understanding on the months in which we had better revenue but by this analysis we were able to draw some understanding on what type of booking was preferred more on certain days of the week. This analysis will help the franchise to predict the possible needs of customers on any given day and can plan to have cabs ready accordingly.

#### **4.2 Recommendations to the Franchise:**

The following recommendations are suggested to the franchise based on the issues faced by them as mentioned by Mr. James Dildon, the manager of the franchise.

##### **To cement a place in the competitive market:**

- ✧ Use digital platforms for marketing : Use social media to inform people about the the franchise and its features in addition to traditional way of marketing that is being used now.
- ✧ Feedback from existing customers: Feedback about the rides in the franchise from customers can be recorded and uploaded in the social media pages.
- ✧ Have a responsive social media team: Enquiry in social media should be addressed without delay hence that will serve as another source for booking rides.

##### **Fixed price for frequent trips:**

- ✧ Form frequent trips based on distance : The frequent trips can be formed based on distance within a range of few KM and those frequent trips should have fixed price.

- ✧ Scale up the frequent trip distance to an extent: The frequent trips should not be limited within a smaller range, instead can have a particular threshold distance beyond which the billing can use the existing price calculation.

**Provide offers and discounts:**

- ✧ Decide offers based on events : Offers and discounts can be provided during certain local events or functions.
- ✧ Identify regular customers : Identify the regular customers by keeping a track of bookings done by the same customers.
- ✧ Consider discounts to regular customers : Can provide discounts to the regular customers after certain threshold of certain bookings in a month to make them eligible for discounts.
- ✧ Marketing the offers and discounts : Marketing the offers and discounts digitally and physically to let customers aware of them.

**Avoiding Trip cancellation:**

- ✧ Forecast trip volumes in advance : The day wise analysis can be used to predict the volume of different types of trips in any given day.
- ✧ Reserve cars for certain booking types : Cars can be reserved for the most booked trip types as they should be treated as high priority to ensure seamless operation to most revenue yielding trips.

**Better franchise - customer relationship:**

- ✧ Getting regular feedback : Have regular feedback sessions with customers through calls or feedback forms.
- ✧ Take quick action on incidents : Address incidents at the earliest to avoid major conflicts and to try to get to hassle free resolution.

## 5 Conclusion

In conclusion, the analysis done on the 6 month booking data of Fast Track Thoothukudi franchise gave some valuable insights on the revenue and expenditure of the franchise. The major contributor to revenue is from the outstation trips which has some good number of bookings and an excellent average amount per trip. The revenue yielded and the number of bookings done has peaked in the months of May and June and when we went deep into analysis we got the weekends as chief contributors to revenue. The recommendation wise, Fast track Thoothukudi can use digital marketing alongside the existing physical marketing done, fix constant price for most frequent trips, make some offers and discounts based on the customers, build good customer relationship predict demand on certain days of the week and plan their resources accordingly. These recommendations should blend in easily to the existing day to day activities performed by the franchise and I sincerely believe these recommendations will help secure a place in the market, attract more customers and bring in a change in the income and ultimately the income of the franchise.

The colab link to the charts and analysis done for this project is :

[https://colab.research.google.com/drive/1HQpt9SqWOER\\_qlwyNGe42-2Kvkc13AqG?ouid=114717977936808325144&usp=drive\\_link](https://colab.research.google.com/drive/1HQpt9SqWOER_qlwyNGe42-2Kvkc13AqG?ouid=114717977936808325144&usp=drive_link)

The link to the tables and charts prepared using excel is:

[https://docs.google.com/spreadsheets/d/1juKzMAF0AICpfE-NU2NaXnGZEp\\_h\\_kbU/edit?usp=drive\\_link&ouid=114717977936808325144&rtpof=true&sd=true](https://docs.google.com/spreadsheets/d/1juKzMAF0AICpfE-NU2NaXnGZEp_h_kbU/edit?usp=drive_link&ouid=114717977936808325144&rtpof=true&sd=true)