

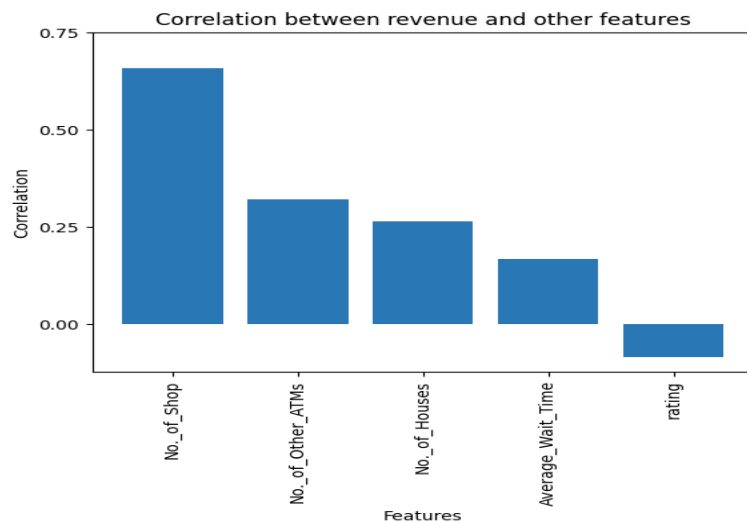
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COMP9321

### Assignment3 Report

In this report, we will analyze the data provided by the company and provide recommendations on the ideal location features for a new ATM machine to maximize revenue. The dataset included various features related to the existing ATMs, such as their location, type, placement, and other factors that may affect their revenue. Through analyzing these features and their relationship with the revenue, we aimed to identify the key factors that contribute to the success of an ATM location and provide actionable insights for the company's decision-making process. All analysis is based on *train.tsv* file.



Firstly, we analyze the correlation between each feature of the dataset. From the left diagram, we can see the correlation for “Number of shops” is negative, others’ are positive, especially, feature “rating” has relatively high correlation with revenue.

Secondly, we can go through each feature to analyze. As for “Atm Type”, we calculate mean revenue for each column, we can see that from image bottom left, The Atm type which is semi urban will have relatively high revenue. we repeat this step for “ATM\_Location\_TYPE” and “ATM\_Placement”. It is better to choose place an ATM with “facing road” and “passbook printing and withdraw” features.

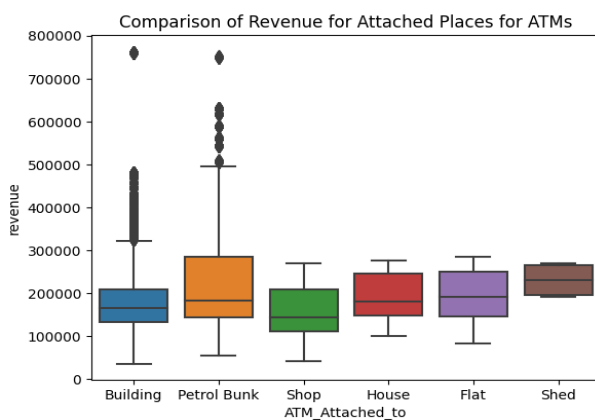
revenue	
ATM_TYPE	
Bigger Towns	221233.549172
Semi Urban	245052.133649
Town	211320.809011
Urban	169958.984132

revenue	
ATM_Placement	
Facing Road	186342.561029
Little Inside	135441.147249

revenue	
ATM_Location_TYPE	
Checkdrop and Withdraw	208915.492578
Deposit and Withdraw	148305.614542
Only Withdraw	185395.395728
Passbook Printing and Withdraw	236696.312536



Next, we analyze the relationship between number of shops and revenue. It is a scatter plot. According to the left diagram, we can find that, if we want to get highest revenue, we had better to choose a location which have about 60~70 shops around, resulting in nearly \$800000 revenue.



As for “ATM Attached to”, attaching ATM to Petrol bunk might be a good choice, it has relatively high upper whisker than others, outliers show that it is able to earn more revenue above \$500000. If you do not want to suffer risks, you can choose house, flat or shed. Since they have relatively high lower whisker.

	revenue
Estimated_Number_of_Houses	
<20000	183378.842918
20000-40000	247094.999751
40000-80000	290050.826848
80000-150000	307313.592233
150000-200000	258191.990291
>200000	380089.320388

Next, we compute mean revenue of different group for “Estimated number of houses”. We can see that the revenue will increase as the number of houses increases until it reaches about 150000. Number of houses greater than 200000 contains many outliers and has few samples, we can ignore them.

In conclusion, we found that semi-urban areas had relatively high revenue and recommended placing ATMs facing roads with passbook printing and withdrawal features. Additionally, we suggested attaching ATMs to petrol bunks or choosing a house, flat, or shed location to minimize risks. we also found that the revenue increased as the number of shops and estimated number of houses increased up to a certain point.