Faculty of Management
Osmania University
Practical Question Bank
BBA (Business Analytics)
Semester VI w.e.f. 2021
COURSE CODE: DSE - 603
COURSE: (B) Marketing ANALYTICS – II (MR)

Total Marks: 35

Record : 10 Marks
Practical's: 15 Marks
Viva Voice: 10Marks

Record Work:

1. **Input: Students must write the procedure/steps for the given question /problem.**
2. **Process: Students must write Steps/ Navigations to execute**
3. **Output: Students must show the Result/Output and interpret the results.**
4. **Use Excel**

Using FinTech Customer Life Time value (LTV) answer the following questions in Excel.
https://www.kaggle.com/datasets/harunrai/fintech-customer-life-time-value-ltv-dataset

1. Calculate customer lifetime value from the data set given.

2. Customer Segment into High, Medium, and Low Value categories based on their LTV. Create a dashboard showing the percentage of customers in each category and their corresponding total LTV.

3. Calculate the LTV of customers acquired through marketing campaigns and compare them with the LTV of customers who were retained over a period of time. Create a chart that shows the differences in LTV for both groups.

4. Analyze how customer demographics (e.g., age, gender, income) impact LTV. Create a scatter plot to visualize the relationship between these demographics and LTV.

5. Based on the LTV calculations, we recommend how marketing resources should be allocated between Customer Acquisition and Customer Retention. Create a table showing the potential return on investment (ROI) for each approach.

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6. Use Monte Carlo simulation in Excel to simulate the impact of different churn rates and retention rates on customer LTV. Run 1,000 simulations and summarize the results in a histogram.

7. Create a time series analysis to forecast the future LTV of customers based on their historical transaction data. Use moving averages or exponential smoothing for the forecast.

8. Investigate how changes in churn rate affect LTV. Create a table that shows LTV under different churn rate scenarios (e.g., 5%, 10%, 20% churn rates).

9. Using regression analysis or correlation, identify the key drivers (e.g., frequency of purchase, average order value, service usage) that influence customer LTV. Create a report with the identified drivers and their influence on LTV.

10. Using the dataset, calculate the LTV for customers who have purchased different product categories. Compare the LTV across product categories and identify the most profitable ones.

11. Based on the LTV calculation, identify the top 20% of customers who bring in the highest LTV. Create a targeted marketing strategy for this high-value group.

12. Use the LTV data to value the business by summing up the total LTV of all customers. Discuss how this figure can be used to assess the business's growth and potential valuation.

13. Using regression analysis, identify the key factors (e.g., monthly charges, contract type, tenure, tech support) that significantly affect customer LTV. Present a summary of your findings.

14. Using the calculated LTVs of customers, estimate the business valuation by summing the total LTV of all customers. Explain how this metric can be used by business managers to assess the company's growth potential.

Use Telco Customer Churn Data set to solve questions 15to 25.
https://www.kaggle.com/datasets/blastchar/telco-customer-churn

15. Using the dataset, group customers into segments based on their Monthly Charges and Tenure using clustering techniques in Excel.

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16. Identify clusters of customers based on their Payment Method and Contract Type.

17. Use clustering to identify high-risk customers for churn based on their Monthly Charges and Streaming Service Usage.

18. Create a matrix of customers and services (e.g., Phone Service, Streaming Movies, Streaming TV) to identify patterns.

19. Find customers with similar profiles based on their preferences for Online Security, Tech Support, and Device Protection.

20. For customers with Month-to-Month Contracts, recommend long-term plans based on preferences of similar customers.

21. Create a decision rule to classify customers as likely to churn or not likely to churn based on their Tenure and Monthly Charges.

22. Create a classification tree to segment customers by their Contract Type (e.g., Month-to-Month, One-Year, Two-Year) and predict churn.

23. Build a classification system to suggest retention strategies for customers based on Internet Service Type and Payment Method.

24. Develop a classification tree using attributes like Tech Support, Streaming Services, and Monthly Charges to predict churn.

Use Market Basket Analysis data set to solve the questions from 25 to 34.
https://www.kaggle.com/datasets/aslanahmedov/market-basket-analysis

25. Identify the top 10 pairs of items that are frequently purchased together. Use the Apriori algorithm to generate association rules.
Dataset Columns to Use: Transaction ID, Item Name.

26. Calculate the lift value for association rules generated. Interpret the significance of lift in determining item relationships.
Output: Confidence and Lift for each rule.

27. Generate all frequent items with a minimum support of 0.01. Display the itemsets along with their support values.
Use: Support threshold.

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28. Product Placement Optimization:
Based on the frequently purchased item pairs, suggest shelf placement strategies for maximizing cross-selling opportunities.
Task: Visualize item co-occurrences using a heatmap.

29. Group items into categories and analyze which categories contribute the most to frequent itemsets. Suggest strategies for allocating more shelf space.
Dataset Columns to Use: Item Category, Frequency.

30. Identify the top 20 items contributing to the highest percentage of sales. Create a Pareto chart to visualize the results.
Output: Pareto Chart.

31. Identify the impact of promotional campaigns on the frequency of items purchased together. Compare pre-promotion and post-promotion transaction data.
Dataset Columns to Use: Transaction Date, Promotion Flag, Items

32. Calculate the percentage sales uplift for items that were marketed together as part of a bundle or promotion.
Task: Compute Uplift for Bundled Items.

33. Analyze transaction data segmented by marketing channels (e.g., email, social media, in-store). Identify the channel with the highest conversion rates for frequently purchased itemsets.
Columns to Use: Marketing Channel, Items Purchased.

34. Perform clustering on customer purchase behavior to segment customers into distinct groups. Identify the product preferences of each segment to tailor marketing efforts.
Use: Clustering Techniques like K-means.

Use Advertising Analytics data set from Kaggle and solve questions from 35 to 44
https://www.kaggle.com/datasets/ashydv/advertising-dataset

35. Calculate the average CTR (%) for each media channel. Which media channel has the highest average CTR?

36. Determine the total advertising cost across all campaigns. What percentage of the total cost was spent on TV advertising?

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37. Identify the top 3 campaigns with the highest ROAS. What characteristics do these campaigns share?

38. Group the campaigns by media channel and calculate the average revenue for each channel. Which channel generates the highest average revenue?

39. Analyze the correlation between Impressions, Clicks, Conversions, and Revenue. Which two variables show the strongest positive correlation?

40. List all campaigns with a CTR greater than 10%. Which media channel has the highest proportion of campaigns meeting this criterion?

41. For campaigns with more than 1,000 conversions, calculate the average conversion rate. Which media channel is most effective at converting clicks into customers?

42. Plot a scatter plot of Revenue vs. Cost for all campaigns. Identify and describe any outliers that either overperform or underperform.

43. Calculate the cost per conversion for each campaign. Which media channel has the lowest average cost per conversion?

44. Group campaigns into 3 buckets based on the number of impressions (low: <50,000, medium: 50,000–100,000, high: >100,000). Analyze the average revenue generated by each bucket. Does higher impressions always lead to higher revenue?

Use Tableau for the questions 45 to 54.

45. Create a bar chart to compare the total revenue generated by each media channel. Which channel contributes the most to overall revenue?

46. Use a line chart to visualize the CTR (%) for each media channel across all campaigns. Which channel shows the most consistent CTR?

47. Build a scatter plot showing the relationship between Cost ($) and Revenue ($) for all campaigns. Highlight campaigns with ROAS > 3.0.

48. Create a heat map to show the distribution of conversions across different media channels. Which channel has the densest concentration of high conversions?

49. Develop a pie chart to represent the proportion of total advertising cost

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allocated to each media channel. Which channel consumes the largest share?

50. Create a dual-axis chart to compare the Conversion Rate (%) and ROAS for each campaign. Identify any inverse relationships between the two metrics.

51. Build a dashboard summarizing total impressions, clicks, CTR, conversions, cost, and revenue for each media channel. Include filters for Ad ID and media channel.

52. Use bins to categorize campaigns into three groups based on the number of impressions (low: <50,000, medium: 50,000–100,000, high: >100,000). Create a bar chart to display average revenue for each category.

53. Design a dashboard highlighting the top 10 campaigns based on ROAS. Include key metrics such as impressions, clicks, conversions, cost, and revenue.

54. If geographical data is added, create a geo-map to display campaign revenue by region. Which regions generate the most revenue?

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