


MIS771 Descriptive Analytics and Visualisation	
Topic 1 Tutorial – Business Problem Solving	
Brief Answers	

1. Identify the situation presented in the case study.

Symptom – Recent revenue drop.

Likely problem(s)

1. BLITZ customers do not shop at BLITZ as before but at the other competitor stores (Partial customer churn).
2. Customer churn.

Decision statement(s)

1. Prevent customer churn
2. Identifying factors influencing customers' satisfaction and loyalty.
3. What aspects of the loyalty program, online store, and product features can be improved to be more attractive to the customers and to obtain a competitive position in the market.

Research Objectives

1. List actions that may overcome the barriers to visit BLITZ stores.
2. Describe how external factors influence BLITZ sales and attitude towards shopping
3. List actions that make loyalty program and product features more attractive to the customers.

Research Questions

1. What are the restricting factors (barriers) for visiting the BLITZ stores?
2. What factors can trigger customer churn?
3. What features make the loyalty program / online store less attractive to the customers?

Research hypothesis

1. Lack of new products and high pricing of products are barriers to visit the BLITZ stores.
 2. Quality of products is related to satisfaction of customers
 3. Quality of service is related to satisfaction of customers
 4. Customer unawareness of the loyalty program benefits is a reason for it to be less attractive to the customers.
2. Explain possible research design that can be used based on the identified research objectives / hypothesis.

Primary (Qualitative) - data can be collected by having focus groups with BLITZ customers

Survey - Customer Survey can be based on the findings of the focus groups and be used to collect the primary data. A questionnaire should be formed to include all the aspects identified above. A small sample of customers could be interviewed (face to face or telephone interviewing) to obtain their responses for the questionnaire designed.

3. Explain the sampling design that can be used to identify the target sample for proposed market research in the case study. State your reasoning behind the selection.

As the business problem includes investigations on loyalty program, sample should include customers from all tiers. So **Stratified Sampling** could be used to come up with a proper sample. A **simple random sampling** can be used to select a subset within a stratum.

4. What kind of data need to be gathered to address the identified research problems? Also classify identified data based on different data types.

Primary Data

Gender – (Nominal)

Age – (Ratio)

Average Spend per Visit – (Ratio)

Customer Intentions to Visit the Store Again – The percentage of likelihood that a survey respondent would visit the store in next two weeks. (Ratio)

Attitude towards BLITZ Loyalty Program – Rating scale that describes how favourably survey respondent's view of loyalty program – (Ordinal – assuming 1-5 scale)

Product Purchase interest – Rating scale that shows how interested a customer in buying a product. (Ordinal – assuming 1-5 scale)

5. What data analysis techniques can be used to address the identified research problems?

Descriptive Analytics techniques can be used to analyse the current situation and better understand the problems. Moreover, correlations analysis with external factors could be used to understand how external factors impacting the business measures.

Predictive Analytics techniques can be used to model the likelihood of customer churn, etc. Also could be used to map the research data back to the entire customer base to generalise the research findings.

Prescriptive and Pre-emptive Analytics techniques could be used to identify target customer base for different promotions based on the descriptive/predictive analytics findings and to provide value added services to the customers.

Sampling and Data Questions

6. Which sampling technique has been used in the following situations? In each case, first decide if it is random or non-random sampling and then state the actual technique.

- a) The Age newspaper conducts reader polls on their website. Every day a question is posted and readers select either 'yes' or 'no' depending on if they agree or disagree.

Non-random – Self-selection Sampling.

- b) On the first Thursday of each month, a pizza delivery shop phones every customer who has ordered a pizza between 7pm and 9pm to ask them about the promptness of delivery and quality of the pizza.

Non-random – Convenience Sampling.

- c) Each quarter, a sales manager selects and interviews what in her opinion is a range of good, middle and poor performing sales staff to get employee feedback.

Non-random – Judgement Sampling.

- d) A factory producing car parts runs three continuous shifts. As part of the quality control program they randomly select 40 parts from each shift and check for any defect.

Random – Stratified Sampling.

7. *Piano Design*: The width of piano keys became standardised 120 years ago, based on the needs of European male pianists. Some pianists are questioning the 'one size fits all' approach to the piano keyboard, which disadvantages many.

Measurement Error (with hand-span).

Questions may require guessing in some cases (weight).

8. For each question on the hand-span survey write down whether the data collected is numerical or categorical and also the scale of measurement

Variable Name	Variable Type	Measuring Scale
Gender	Categorical	Nominal
Age	Numerical	Ratio
Height	Numerical	Ratio
Weight	Numerical	Ratio
Ethnic Background	Categorical	Nominal
Learn to play Piano (Y/N)	Categorical	Nominal
Hand-Span Measurement	Numerical	Ratio