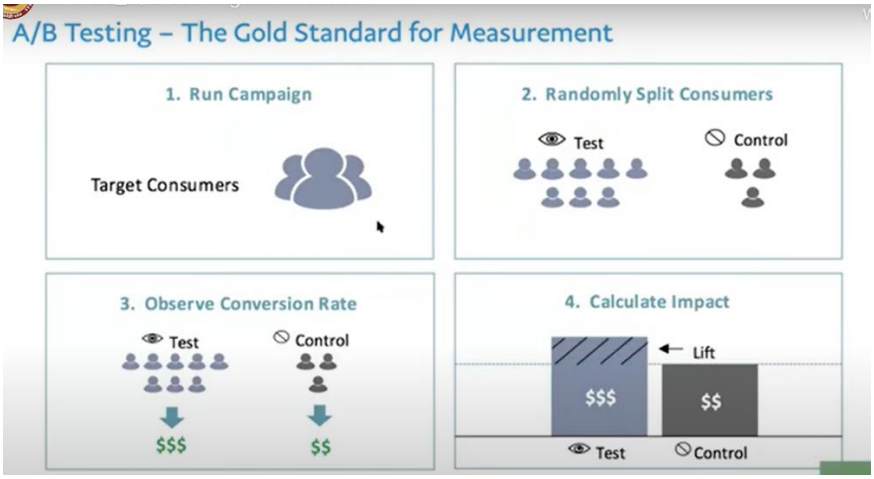
WEEK 11&12:BY -Manisha Pal

The notes are based on discussion on case study of PayBuddy:

A/B Testing

Purpose: A/B testing, also known as split testing, is used to compare two versions of a variable to determine which one performs better. This technique helps in optimizing marketing strategies, website designs, or other business practices based on empirical data.

How It Works:



1. **Identify the Variable**: Determine which element you want to test. This could be anything from a marketing email subject line to a webpage layout.
2. **Create Two Versions**: Develop two versions of the variable you are testing. For example, if you are testing email subject lines, create Version A and Version B with different subject lines.
3. **Divide the Audience**: Randomly split your audience into two groups. One group receives Version A, and the other receives Version B.
4. **Run the Test**: Implement both versions simultaneously to ensure that external factors do not skew the results. Make sure to track key metrics for each version, such as open rates for emails or conversion rates for webpages.
5. **Analyze Results**: After collecting sufficient data, compare the performance of the two versions. Determine which version achieved better results based on the metrics you tracked.
6. **Implement Findings**: Use the insights gained from the test to inform your decisions. If Version B outperforms Version A, you might decide to use the features or approach from Version B moving forward.

Example:

- **Test Variable**: Email subject line
    - **Version A**: "Exclusive Offer Just for You!"
    - **Version B**: "Don’t Miss Out on This Special Discount!"
- **Metrics Tracked**: Open rate, click-through rate, and conversion rate.

- **Results**: If Version B has a higher open rate and click-through rate, it suggests that the subject line in Version B is more effective in engaging the audience.

Credit Risk Overview

Credit Risk refers to the potential that a borrower or counterparty will fail to meet their obligations in accordance with agreed terms. Essentially, it is the risk of loss due to a borrower's default or failure to make required payments. This is a key consideration for lenders, investors, and financial institutions when evaluating the likelihood of a borrower defaulting on a loan or debt.

Key Concepts in Credit Risk

1. **Default Risk**:
    - The risk that a borrower will not be able to make the required payments on a loan or other debt obligations.
2. **Creditworthiness**:
    - An assessment of a borrower's ability and willingness to repay debt. It is typically evaluated using credit scores, financial statements, and other relevant data.
3. **Exposure at Default (EAD)**:
    - The total value at risk in the event of default. It includes the outstanding amount of the loan and any additional credit exposure.
4. **Probability of Default (PD)**:
    - The likelihood that a borrower will default on their obligations. This is often estimated using statistical models and historical data.
5. **Loss Given Default (LGD)**:
    - The proportion of the total exposure that will be lost if a default occurs. It represents the recovery rate or the portion of the exposure that is not recovered.
6. **Credit Spread**:
    - The difference in yield between a risk-free asset (like government bonds) and a risky asset (like corporate bonds). A wider spread indicates higher credit risk.

Evaluating Credit Risk

1. Credit Assessment Techniques

1. **Credit Scoring Models**:
    - **FICO Score**: A widely used credit score model that assesses creditworthiness based on credit history, payment behavior, and other factors.
    - **Credit Rating Agencies**: Agencies like Moody's, S&P, and Fitch provide credit ratings for companies, governments, and other entities.
2. **Financial Statement Analysis**:
    - **Profitability**: Assessing net income, profit margins, and return on equity.

- **Liquidity**: Evaluating current assets versus current liabilities to determine short-term financial health (e.g., current ratio, quick ratio).
- **Solvency**: Examining long-term financial stability through debt-to-equity ratio and interest coverage ratio.
- **Cash Flow Analysis**: Reviewing operating cash flow to ensure the borrower generates sufficient cash to meet debt obligations.

3. **Credit Reports and History**:
   - Examining a borrower's past credit behavior, including payment history, current debt load, and any past defaults or bankruptcies.
4. **Qualitative Factors**:
   - **Industry Risk**: Evaluating the risk associated with the borrower's industry and market conditions.
   - **Management Quality**: Assessing the experience and track record of the borrower's management team.
   - **Economic Environment**: Considering the overall economic climate and how it might impact the borrower's ability to repay.

2. Credit Risk Models and Tools

1. **Statistical Models**:
   - **Logistic Regression**: Used to predict the likelihood of default based on various borrower characteristics.
   - **Decision Trees**: Helps in classifying borrowers into different risk categories based on features and thresholds.
   - **Machine Learning Models**: Advanced techniques like random forests and neural networks are used for predicting credit risk using large datasets.
2. **Credit Risk Metrics**:
   - **Expected Loss (EL)**: The average loss expected over a certain period, calculated as:
     $$\text{EL} = \text{PD} \times \text{LGD} \times \text{EAD}$$
   - **Value at Risk (VaR)**: Measures the potential loss in value of a loan or portfolio over a specified period for a given confidence interval.
   - **Credit VaR**: A specific type of VaR that measures the risk of loss due to credit events like defaults.
3. **Stress Testing**:
   - Simulates adverse economic conditions or scenarios to assess the impact on a borrower's creditworthiness or a portfolio's overall risk.

3. Credit Risk Management

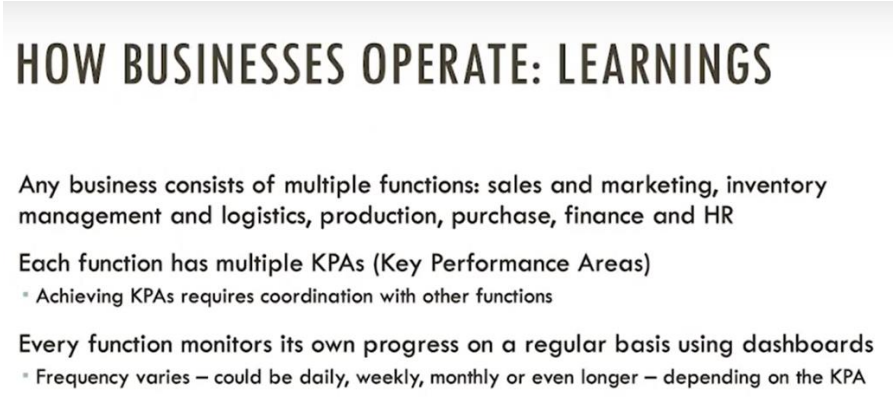
1. **Diversification**:

- Spreading exposure across different borrowers, industries, and geographies to reduce the impact of a single default.

2. **Credit Limits**:
    - Setting limits on the amount of credit extended to individual borrowers or sectors to manage risk exposure.
3. **Collateral and Guarantees**:
    - Securing loans with collateral or guarantees to mitigate potential losses in the event of default.
4. **Credit Derivatives**:
    - Instruments like credit default swaps (CDS) that allow institutions to transfer or hedge credit risk.
5. **Regular Monitoring**:
    - Continuously reviewing and updating the credit risk profile of borrowers and portfolios to reflect changes in financial condition and market conditions.
6. **Risk Mitigation Strategies**:
    - Implementing policies and procedures to manage and reduce credit risk, such as enhanced due diligence and risk-based pricing.

WEEK 12

There is nothing to explain in this week but here are some insights from lectures:



WHAT KIND OF DATA ORIGINATES FROM BUSINESS PROCESSES: KEY LEARNINGS

Data is typically stored in databases, that are typically linked together using an Enterprise Resource Planning (ERP) system

Data is sometimes captured digitally at source (Fabmart, Paybuddy) but must often be entered manually (Ace Gears, Tech Enterprises)

- What data to capture and how requires deep understanding of the underlying process

ERP typically captures raw data only which can be extracted as tables

- Data elements could be structured or unstructured
- HR data tends to be unstructured

Data could be "dirty" – mistakes, or could have missing elements

- Requires data cleaning

Data must be processed in various ways in order to extract meaningful insights

USING WORKSHEETS TO ORGANIZE DATA

Basic functions in worksheets such as sum, max, min, average

Sorting and filters

Vlookup to pull data from one table into another

Pivot tables to consolidate and slice data

Charting tables using line graphs, bar charts, pie charts, scatter plots etc

BEST OF LUCK FOR YOUR EXAM