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STATISTICAL METHODS FOR DECISION MAKING (Week 3)

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LET'S SET SOME GROUND RULES

- Come prepared for these sessions by watching the videos.
  - Concepts will be covered in the videos.
  - Hands-On Application will be covered in Mentor Sessions.

- Submit all assignments on time.

- Let's be punctual & respect each others' time.

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DSBA CURRICULUM DESIGN

FOUNDATIONS

Python for Data Science

Statistical Methods for Decision Making(Week-3/5)

CORE COURSES

Advanced Statistics

Data Mining

Predictive Modelling

Machine Learning

Time Series Forecasting

Data Visualization

SQL

DOMAIN APPLICATIONS

Financial Risk Analytics

Marketing Retail Analytics

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LEARNING OBJECTIVE OF THIS MODULE

- Descriptive Statistics
- Inferential Statistics
- Hypothesis Testing

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LEARNING OBJECTIVES OF THIS SESSION - APPLICATION OF HYPOTHESIS TESTING

- Central Limit Theorem
- Confidence Interval
- One-tail and Two-tail test
- Null and Alternate Hypothesis
- Hypothesis Testing

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TRY ANSWERING THE FOLLOWING

- What is the formula to calculate Standard Error(SE)?
- What is the value of Level of Significance“α” for a confidence interval of 95% given a two tail test?
- Can we use Z-test for a categorical data-type?

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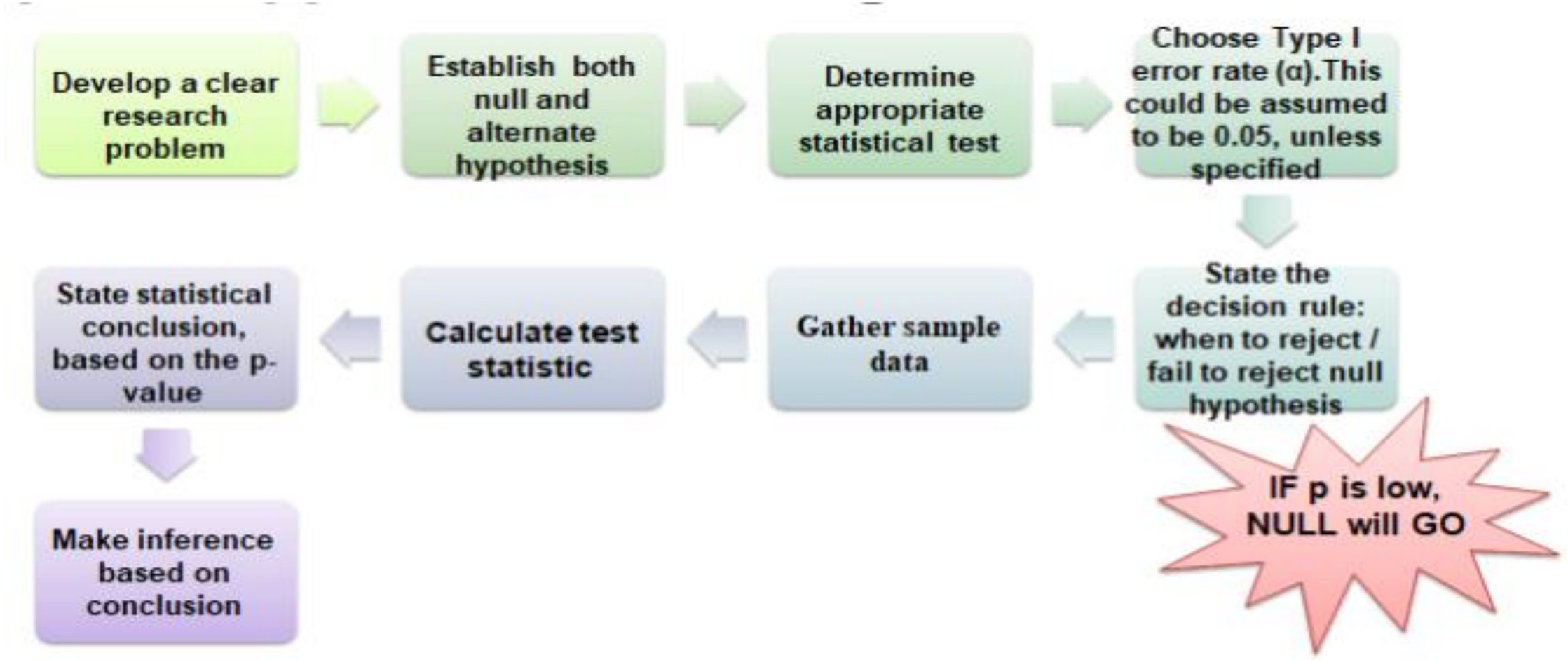
BROAD OVERVIEW

STEPS IN HYPOTHESIS TESTING



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Cosmetic Products - Market Research

1) To analyze consumer brand preference.

Hypothesis : Sales of different cosmetic brands is uniformly distributed.

Chi square test was applied. Hypothesis rejected. Sales of different brands is not uniformly distributed.

1) Consumer attitude towards usage of consumer products

Hypothesis : Consumers of different age groups do not differ significantly in their attitude towards usage of cosmetic products.

Z test was applied & hypothesis was accepted.

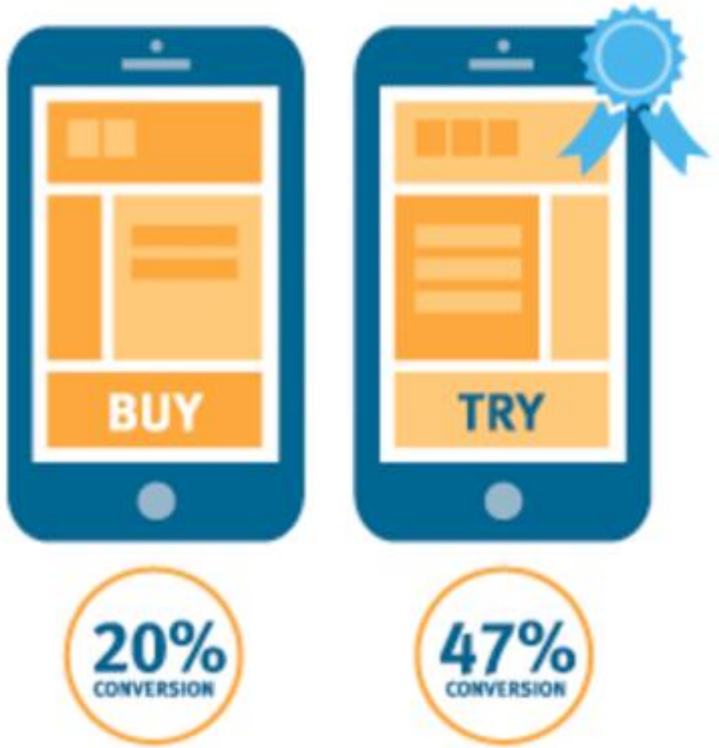
https://www.miet.ac.in/assets/uploads/faculty-img/mba_Cosmetic.pdf

Can Uber double its revenue by changing a single word ?

Changing the word from “buy” to “try” more than doubled the conversions for Uber.

Uber wanted to discover how much extra its core users are willing to pay and hence increase its revenue.

https://factordaily.com/opinions/uber-ab-test-boost-revenue-india/



A/B Test example. Changing a single word more than doubles the conversion rate

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Case Study-1 (Processing Time)

Tom is working in a credit-card processing company as a team-leader. His team is responsible to validate certain data for new credit-card applications. The time spent by his team on an application is normally distributed with average 300 minutes and standard deviation 40 minutes. Tom and his team worked on process improvement to reduce the time spent in processing new applications. After implementing the improvements, Tom checked the time spent by his team on randomly selected 25 new card applications. The average time spent is 290min. Tom is happy that, though it is a small improvement, it is a step in right direction. He shares the good news with his manager Lisa. But Lisa is not convinced about the improvement. At 95% confidence, is the process really improved?

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Case Study-2 (Titan Insurance)

The Titan Insurance Company has just installed a new incentive payment scheme for its life policy sales-force. It wants to have an early view of the success or failure of the new scheme. Indications are that the sales force is selling more policies but sales always vary in an unpredictable pattern from month to month and it is not clear that the scheme has made a significant difference. Life Insurance companies typically measure the monthly output of a salesperson as the total sum assured for the policies sold by that person during the month.

Titan's new scheme is that the sales force receive low regular salaries but are paid large bonuses related to their output (i.e. to the total sum assured of policies sold by them). The scheme is expensive for the company but they are looking for sales increases to compensate for it. The scheme has now been in operation for four months. It has settled down after fluctuations in the first two months due to the changeover.

To test the effectiveness of the scheme, Titan has taken a random sample of 30 salespeople measured their output in the penultimate month prior to changeover and then measured it in the fourth month after the changeover (they have deliberately chosen months not too close to the changeover).

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McDonald's Competition

We've all heard the tagline – "I'm lovin' it". But does the Mcdonalds happy meal really make us happy ? Let us analyse the nutrient value of different Mcdonalds food offerings.

Best Analysis and presentation earns the chance to win exciting prizes.

This was an exciting and fun way to practice and learn the concepts. Competition made me push hard for victory- Shweta Singh

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HAPPY LEARNING