

# E-Content

## Research Methodology in Economics

Semester: V

*Prepared by:  
Dr. Manju Dahiya*

Session 2020-2021



**GALGOTIAS  
UNIVERSITY**

(Established under Galgotias University Uttar Pradesh Act No. 14 of 2011)

**COURSE CONTENT**

Course Code : XXXXXX

Course Name: Data structures using C

**A Classification of Experimental  
Designs**

**GALGOTIAS  
UNIVERSITY**

## What is an Experiment?

- An experiment is generally used to infer a causality. In an experiment, a researcher actively manipulates one or more causal variables and measures their effects on the dependent variable of interest.

GALGOTIAS  
UNIVERSITY

## Necessary Conditions for Making Causal Inferences

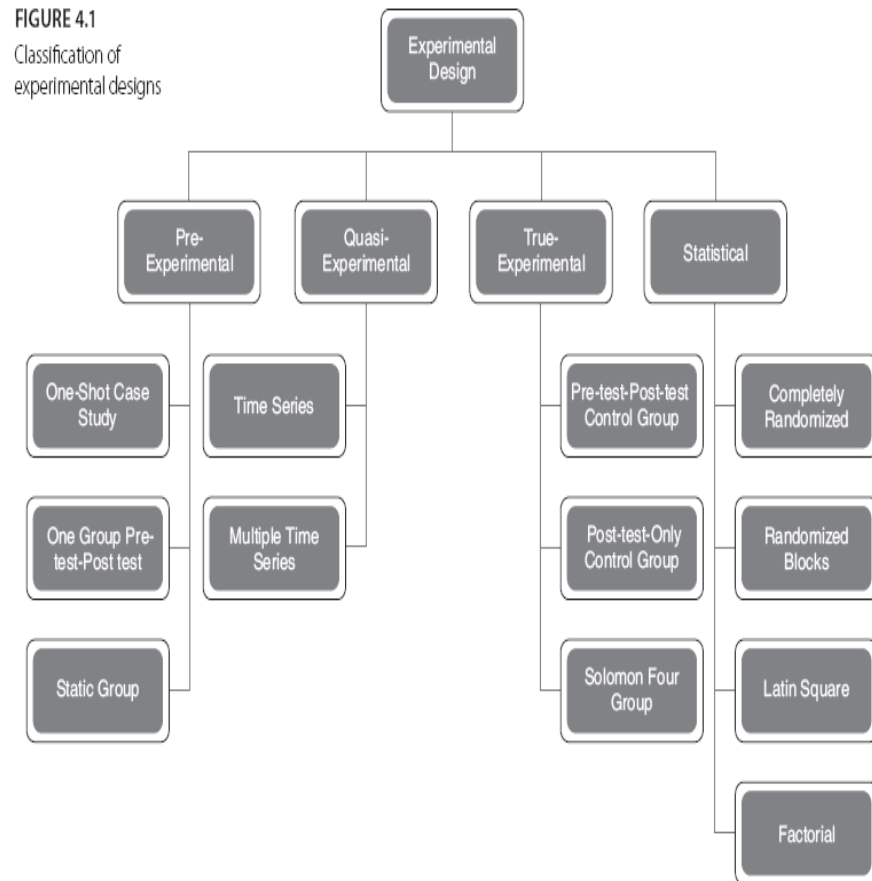
- Concomitant variation
- Time order of occurrence of variables
- Absence of other possible causal factors

GALGOTIAS  
UNIVERSITY

## A Classification of Experimental Designs

FIGURE 4.1

Classification of experimental designs



GALGOTI  
UNIVERSITY

## Pre-experimental design

Pre-experimental designs do not make use of any randomization procedures to control the extraneous variables. Therefore, the internal validity of such designs is questionable.

- *One-shot case study:*

$X \quad O$

- *One-group pre-test–post-test design:*

$O_1 \quad X \quad O_2$

- *Static group comparison:*

Group 1 -  $X \quad O_1$

Group 2 -  $O_2$

GALGOTIAS  
UNIVERSITY

## Quasi-experimental designs

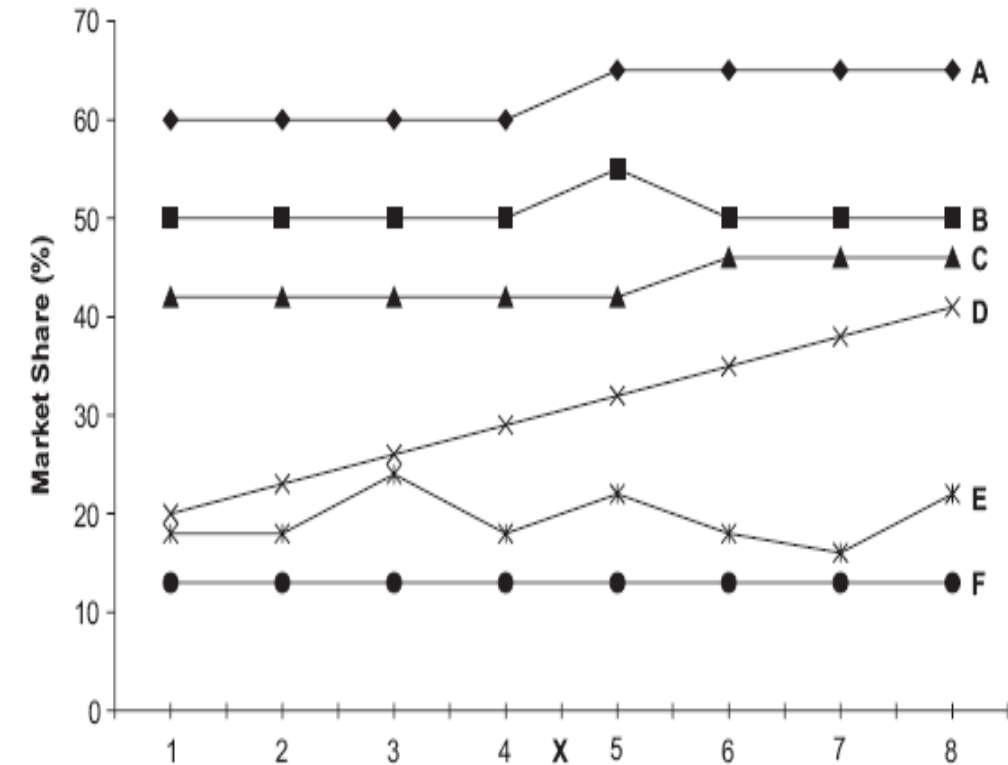
In quasi-experimental design, the researcher can control when measurements are taken and on whom they are taken. However, this design lacks complete control of scheduling of treatment and also lacks the ability to randomize test units' exposure to treatments.

- *Time series design:*

$O_1 O_2 O_3 O_4 X O_5 O_6 O_7 O_8$

*Contd.....*

## Quasi-experimental designs



LGOTIAS  
UNIVERSITY



## Quasi-experimental designs

- *Multiple time series design:*

Experimental Group:  $O_1$   $O_2$   $O_3$   $O_4$   $X$   $O_5$   $O_6$   $O_7$   $O_8$

Control Group:  $O'_1$   $O'_2$   $O'_3$   $O'_4$   $O'_5$   $O'_6$   $O'_7$   $O'_8$

GALGOTIAS  
UNIVERSITY

## True experimental designs

In true experimental designs, researchers can randomly assign test units and treatments to an experimental group. Here, the researcher is able to eliminate the effect of extraneous variables from both the experimental and control group.

- *Pre-test–post-test control group:*

Experimental Group:  $R \quad O_1 \quad X \quad O_2$

Control Group:  $R \quad O_3 \quad O_4$

## True experimental designs

- *Post-test – only control group design:*

Experimental Group:  $R \quad X \quad O_1$   
 Control Group:  $R \quad O_2$

- *Solomon four-group design:*

Experimental Group 1:  $R \quad O_1 \quad X \quad O_2$   
 Control Group 1:  $R \quad O_3 \quad O_4$   
 Experimental Group 2:  $R \quad X \quad O_5$   
 Control Group 2:  $R \quad O_6$

## Statistical designs

Statistical designs allow for statistical control and analysis of external variables.

- Completely randomized design
- *Randomized block design*
- *Latin square design*
- *Factorial design*

1. The main advantage of time series design is that it is possible to control the effect of history.
2. Test marketing is a form of laboratory experiment.
3. Mortality effect is more serious in field experiment than laboratory experiment.
4. Selection bias is not a problem in experiments involving just one group.
5. The one group after-only design is a quasi-experimental design.
6. In the time series design the influence of history to confound the result is very high.
7. In the completely randomized design, it is assumed that there are no extraneous variable which could influence the outcome.

- In the randomized block design, it is assumed that the scores on the dependent variable in each of the block would be more or less same.
- Independent variables are also called treatments.
- In an experiment, the research manipulates one or more variables to measure its effect on the dependent variable.
- Changes in the economic environment can leads to history effect.
- The interactive testing effect would not occur for a group not subject to any treatment.
- Laboratory experiments are low on internal validity and high on external validity.

## REFERENCES

- Stewart, F. (1979); Reasoning and Method in Economics, McGraw-Hill Book Co., London.
- Goode, William J. And Hatt, P.K.,(2006) “*Methods in Social Research*”, McGraw Hill Publications
- Cooper, Donald R and Schindle, Pamela S (2006), “Business Research Methods”, McGraw-Hill Book Education Pvt. Ltd. New Delhi
- Kothari, C.R. and Garg, Gaurav (2015), “*Research Methodology*”, New Age Publications.
- Neuman, W. Lawrence,(2011) “Social *Research Methods*”, *Library of Congress* Cataloguing-in-Publication Data

GALGOTIAS  
UNIVERSITY