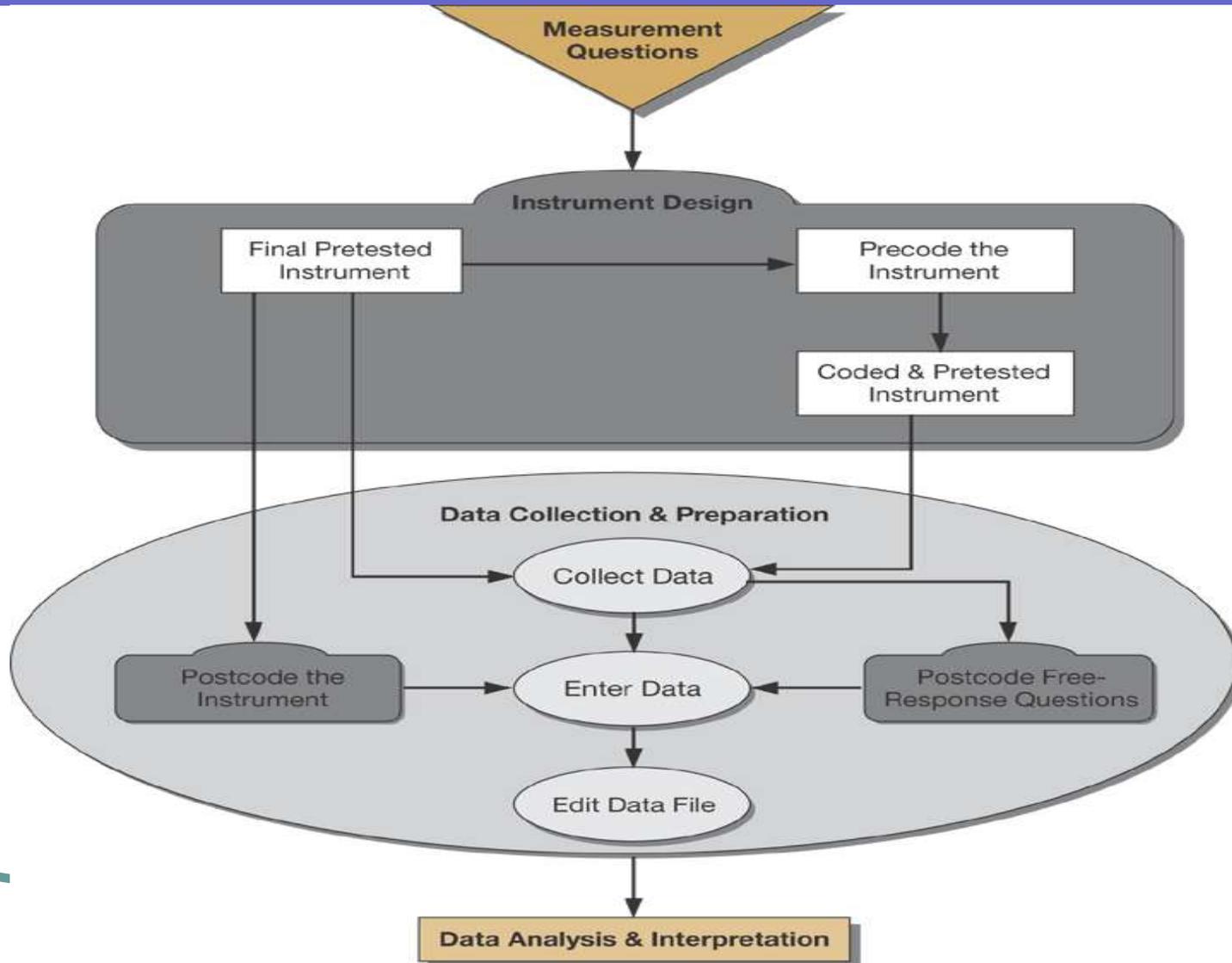
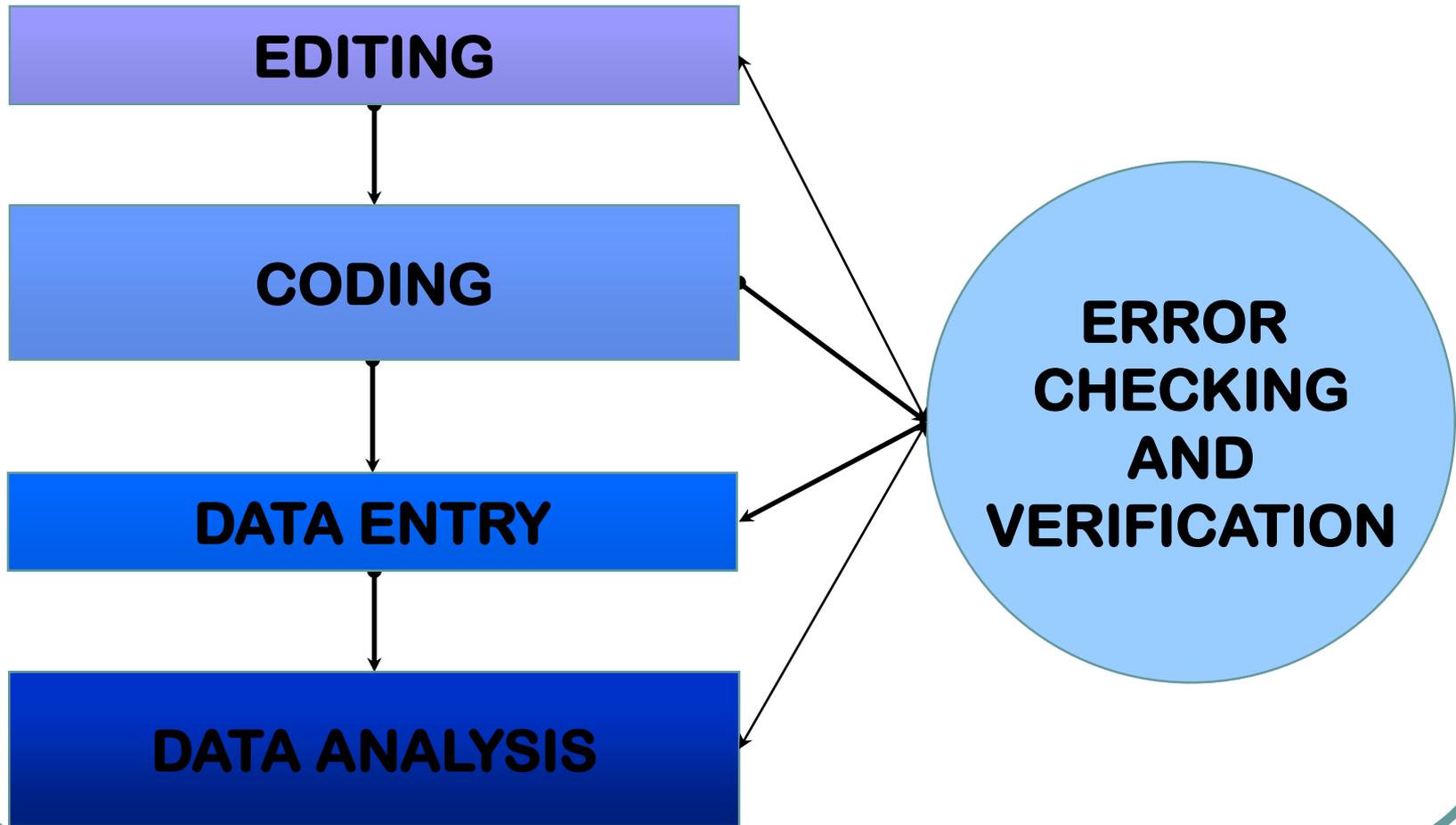


# **Introduction to Data Analysis**

# Data Analysis Process



# STAGES OF DATA ANALYSIS

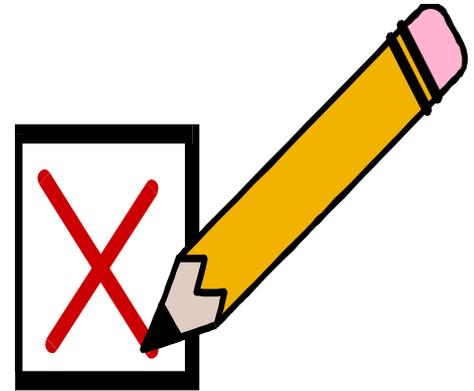


# Introduction

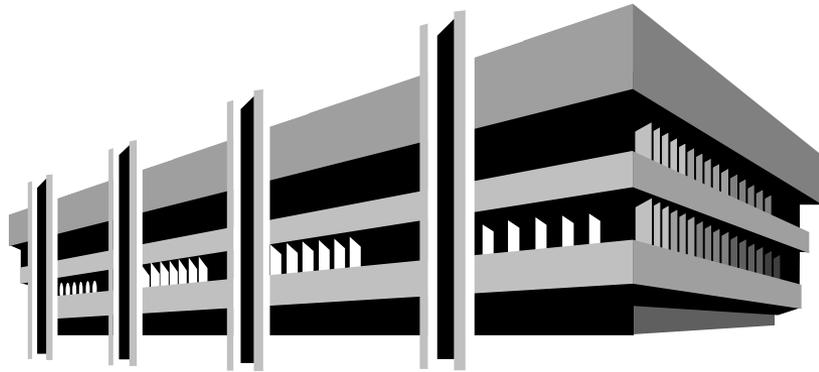
- **Preparation of Data**
  - Editing, Handling Blank responses, Coding, Categorization and Data Entry
  - These activities ensure accuracy of the data and its conversion from raw form to reduced data
- **Exploring, Displaying and Examining data**
  - Breaking down, inspecting and rearranging data to start the search for meaningful descriptions, patterns and relationship.

# Editing

- The Process Of Checking And Adjusting The Data
  - For Omissions
  - For Legibility
  - For Consistency
- And Readyng Them For Coding And Storage



# Editing



**IN-HOUSE  
EDITING**

**FIELD EDITING**



# Birth Year Recorded By Interviewer

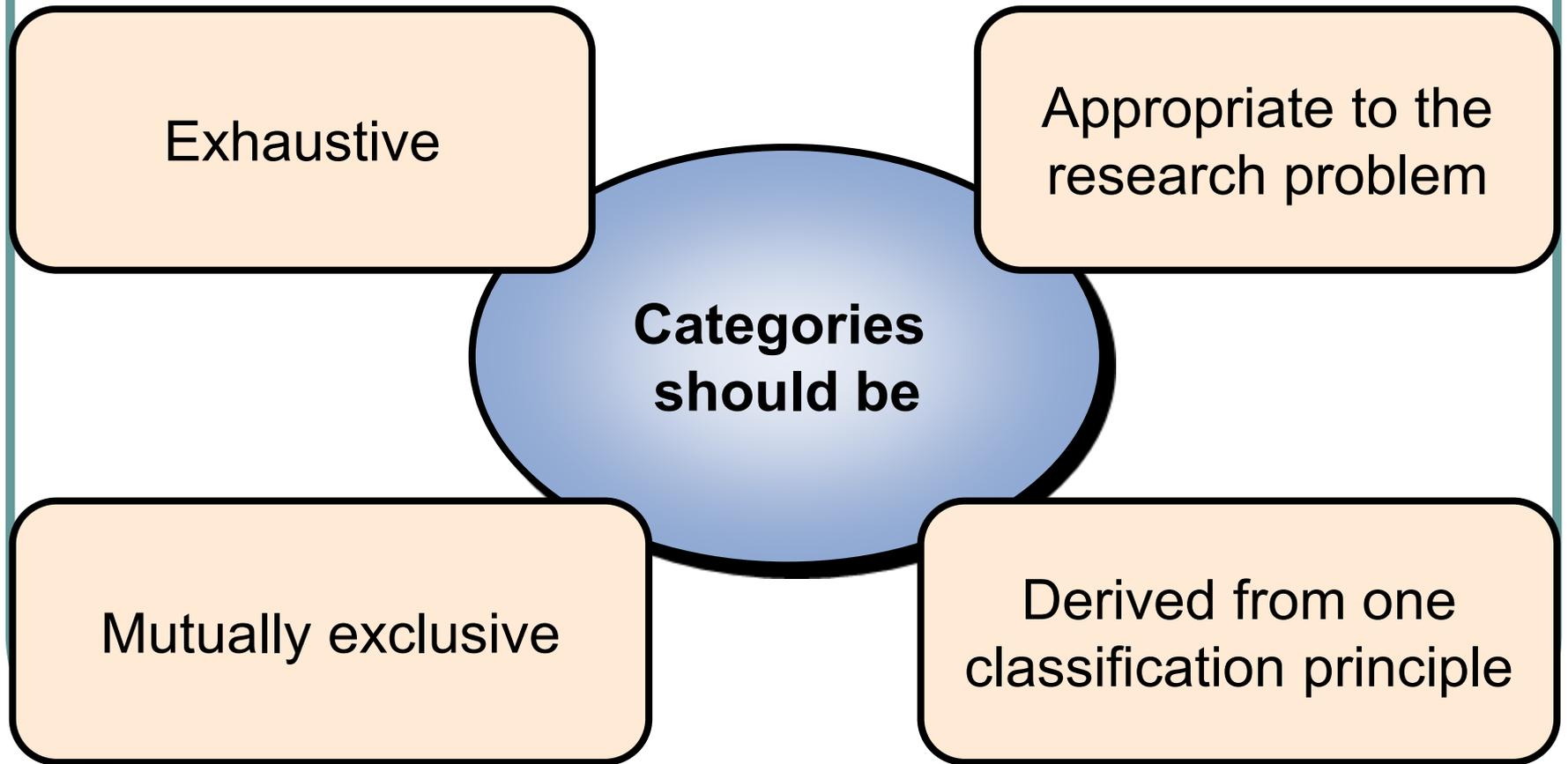
- 1873?
- 1973 MORE LIKELY



# Coding

- Involves assigning numbers or other symbols to answers so the responses can be grouped into a limited number of classes or categories.
- Example:
  - “M” for Male and “F” for Female
  - “1” for Male and “2” for Female
  - Numeric vs Alphanumeric
- Numeric versus Alphanumeric
- Open ended questions
- Check accuracy by using 10% of responses

# Coding Rules



# Appropriateness

- **Let's say your population is students at institutions of higher learning**
- What is your age group?
  - 15 – 25 years
  - 26 – 35 years
  - 36 – 45 years
  - Above 45 years

# Exhaustiveness

- **What is your race?**
  - Malay
  - Chinese
  - Indians
  - Others

# Mutual Exclusivity

- **What is your occupation type?**
  - Professional
  - Managerial
  - Sales
  - Clerical
  - Others
  - Crafts
  - Operatives
  - Unemployed
  - Housewife

# Single Dimension

- **What is your occupation type?**

- Professional
- Crafts

- Managerial

- Operatives

- Sales

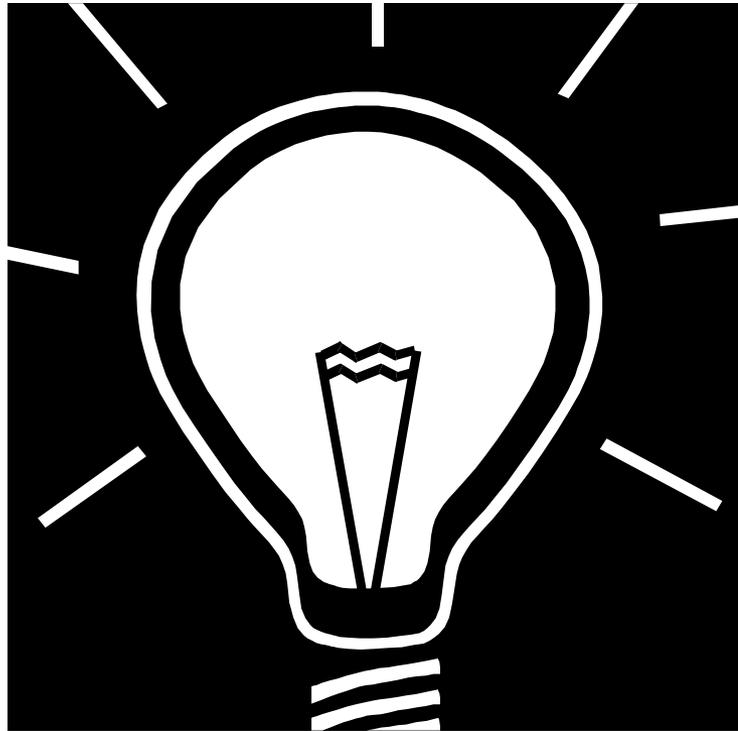
- Unemployed

- Clerical

- Housewife

- Others

# Coding Open-ended Responses



# Coding Open Ended Questions

6. What prompted you to purchase your most recent life insurance policy?

---

---

---

---

---

---

---

---

6

Reason for purchase

1 = Mentioned

0 = Not mentioned

8	Bought home	HOME
9	Birth of child	BIRTHCHD
10	Death of relative or friend	DEATH
11	Promoted	PROMO
12	Changed job/career	CHGJOB
13	Paid college expenses	COLLEXP
14	Acquired assets	ASSETS
15	Retired	RETIRED
16	Changed marital status	CHGMAR
17	Started business	STARTBUS
18	Expanded business	EXPBUS
19	Parent's influence	PARENT
20	Contacted by agent	AGENT
21	Other	OTHER

# Handling Blank Responses

- How do we take care of missing responses?
  - If  $> 25\%$  missing, throw out the questionnaire
  - Other ways of handling
    - Use the midpoint of the scale
    - Ignore (system missing)
    - Mean of those responding
    - Mean of the respondent
    - Random number

# Code Book

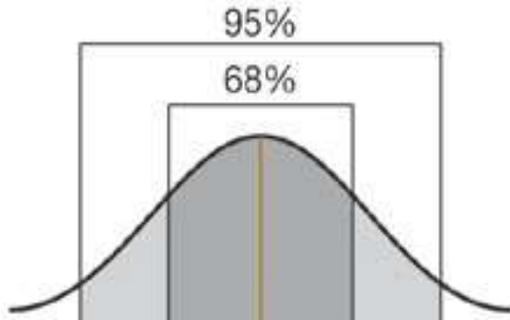
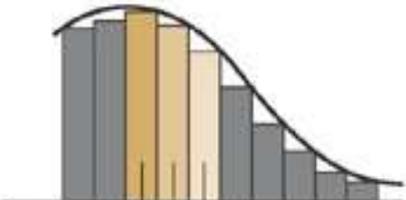
- Identifies each variable
- Provides a variable's description
- Identifies each code name and position on storage medium



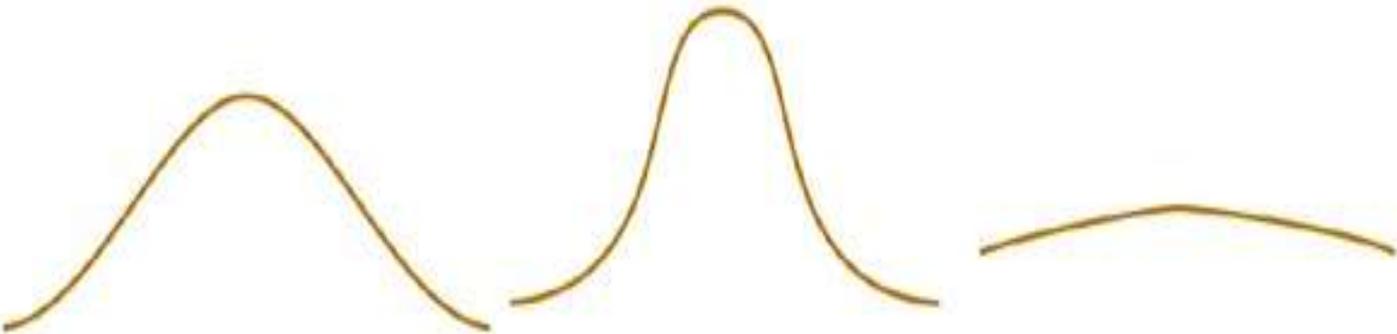
# Data Transformation

- Weights
  - Assigning numbers to responses on a pre-determined rule
- Respecification of the Variable
  - Transforming existing data to form new variables or items
    - Recode
    - Compute

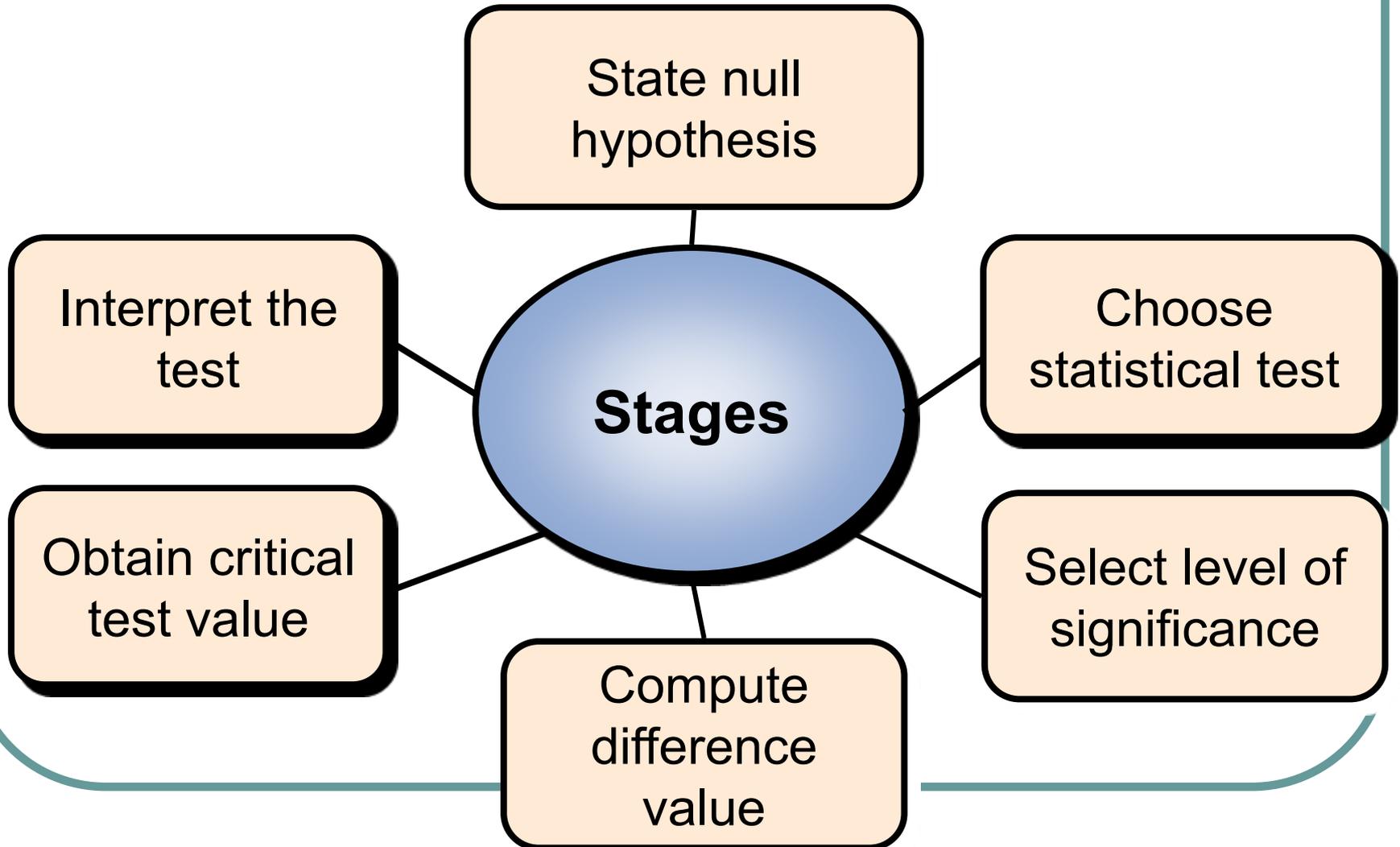
# Characteristics of Distributions

Shape: Skewness	Normal Symmetric	Positive or Right Skewed	Negative or Left Skewed
	 <p>95% 68%</p>		
Spread	$-2\sigma$ $-1\sigma$ $\mu$ $+1\sigma$ $+2\sigma$		
Location	Mean Median Mode	Mode Mean Median	Mean Mode Median
	A	B	C

# Summarizing Distributions with Shape

	
Shape: Kurtosis	Mesokurtic                      Leptokurtic                      Platykurtic
	D                                      E                                      F

# Statistical Testing Procedures



# Hypotheses

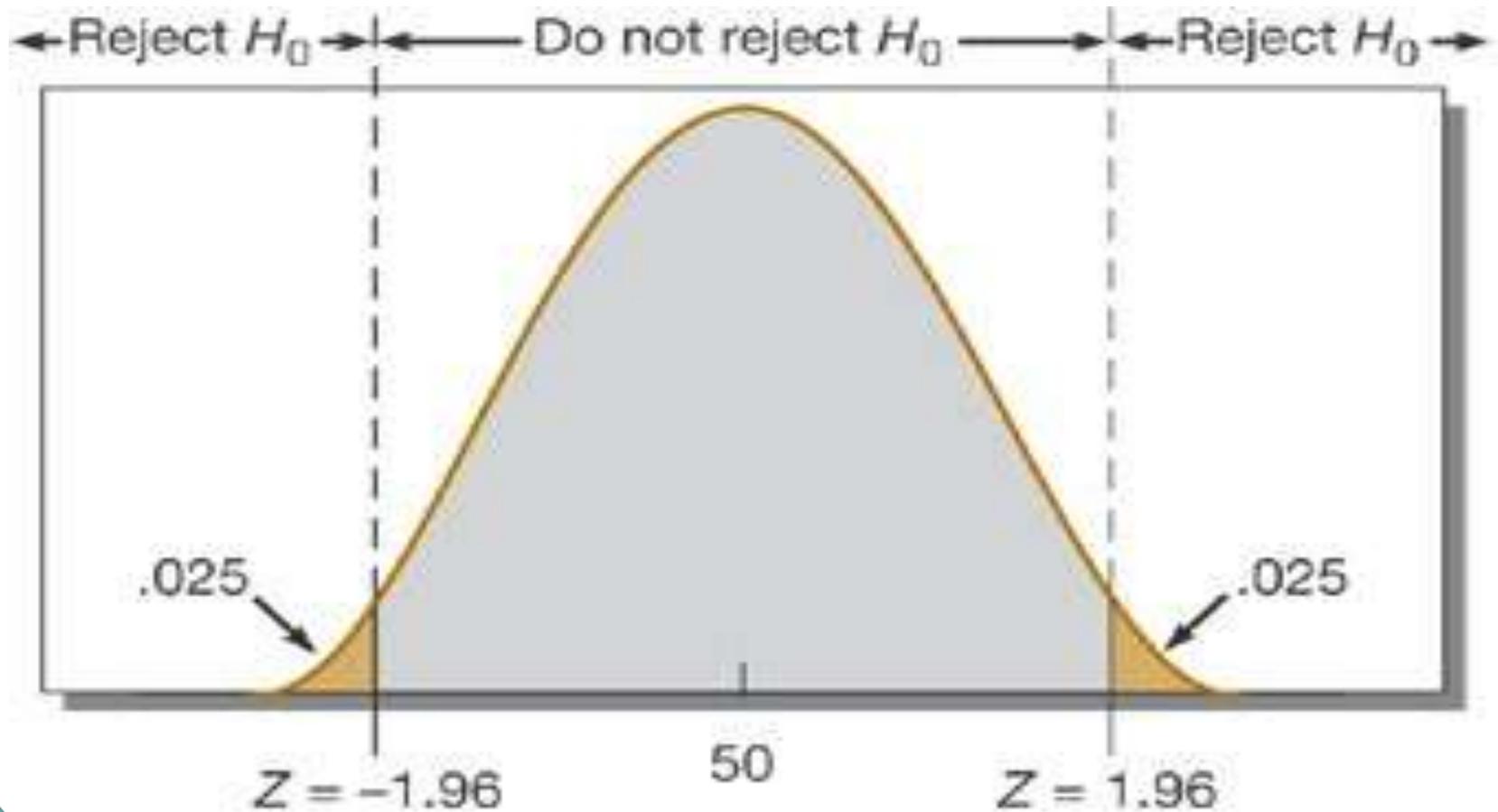
- Null

- $H_0: \mu = 50$  mpg
- $H_0: \mu \leq 50$  mpg
- $H_0: \mu \geq 50$  mpg

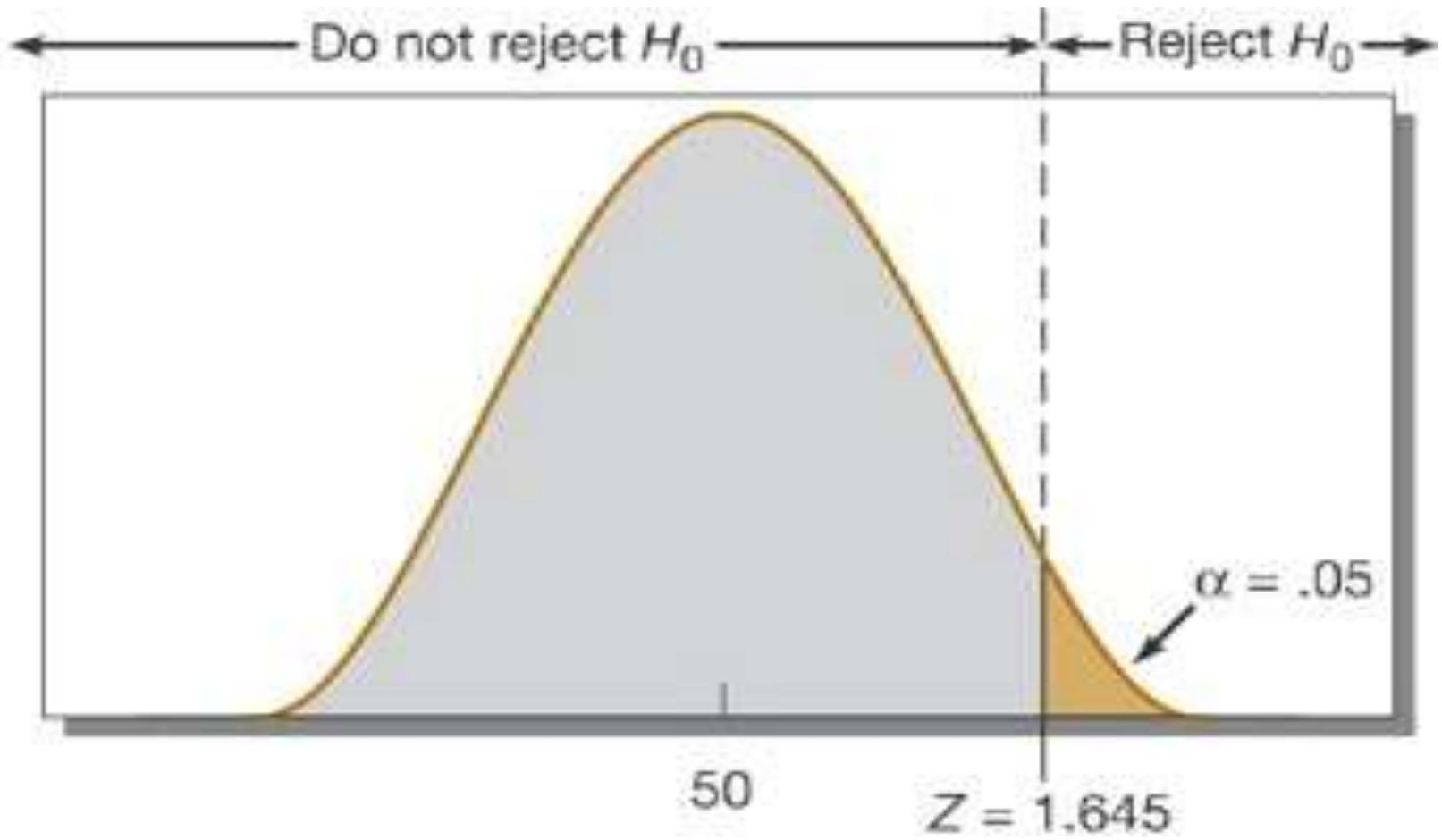
- Alternate

- $H_A: \mu \neq 50$  mpg
- $H_A: \mu > 50$  mpg
- $H_A: \mu < 50$  mpg

# Accept/Reject



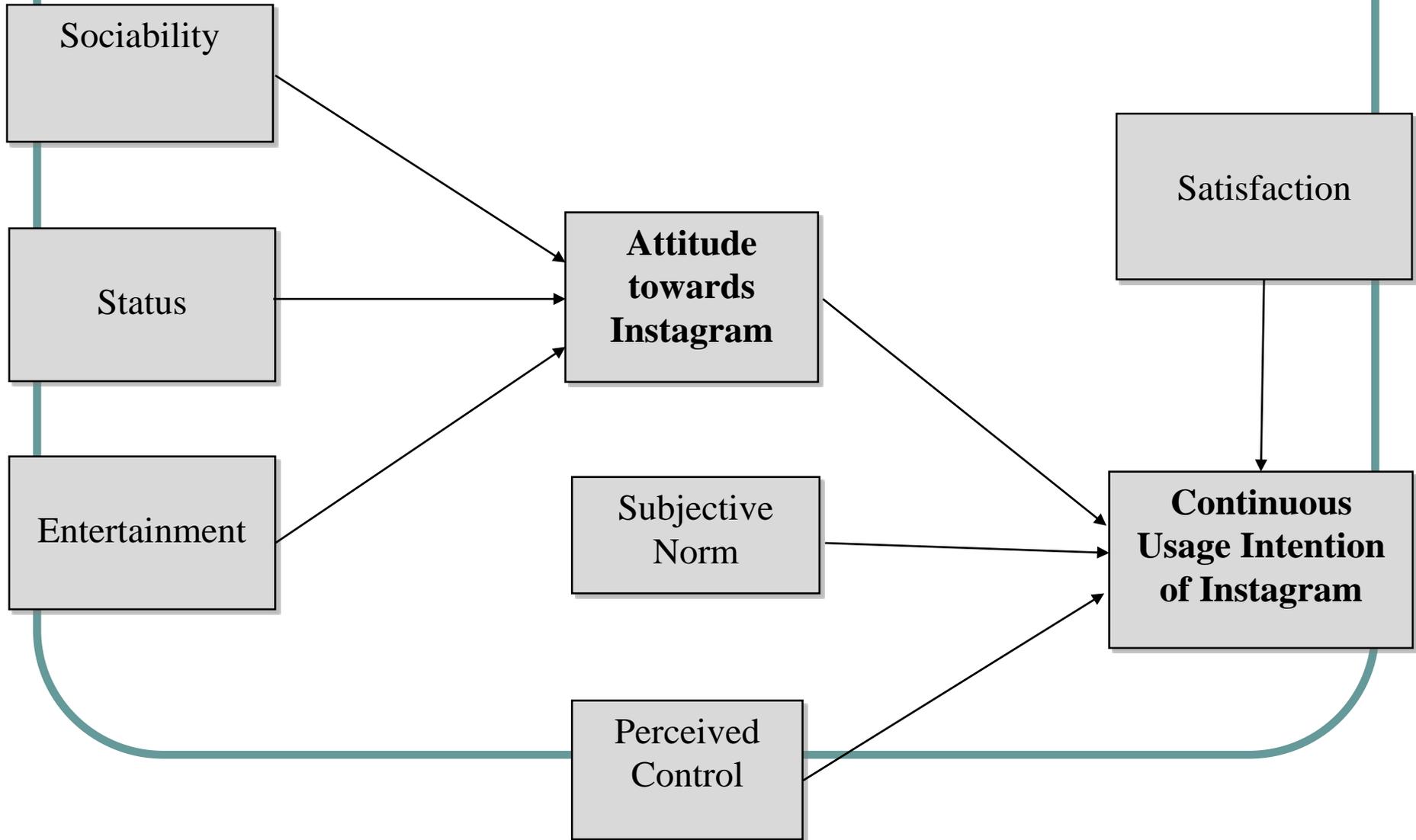
# Accept/Reject



# How to Select a Test

Measurement Scale	Two-Sample Tests			k-Sample Tests	
	One-Sample Case	Related Samples	Independent Samples	Related Samples	Independent Samples
Nominal	<ul style="list-style-type: none"> <li>• Binomial</li> <li>• <math>\chi^2</math> one-sample test</li> </ul>	<ul style="list-style-type: none"> <li>• McNemar</li> </ul>	<ul style="list-style-type: none"> <li>• Fisher exact test</li> <li>• <math>\chi^2</math> two-samples test</li> </ul>	<ul style="list-style-type: none"> <li>• Cochran Q</li> </ul>	<ul style="list-style-type: none"> <li>• <math>\chi^2</math> for <math>k</math> samples</li> </ul>
Ordinal	<ul style="list-style-type: none"> <li>• Kolmogorov-Smirnov one-sample test</li> <li>• Runs test</li> </ul>	<ul style="list-style-type: none"> <li>• Sign test</li> <li>• Wilcoxon matched-pairs test</li> </ul>	<ul style="list-style-type: none"> <li>• Median test</li> <li>• Mann-Whitney U</li> <li>• Kolmogorov-Smirnov</li> <li>• Wald-Wolfowitz</li> </ul>	<ul style="list-style-type: none"> <li>• Friedman two-way ANOVA</li> </ul>	<ul style="list-style-type: none"> <li>• Median extension</li> <li>• Kruskal-Wallis one-way ANOVA</li> </ul>
Interval and Ratio	<ul style="list-style-type: none"> <li>• <math>t</math>-test</li> <li>• Z test</li> </ul>	<ul style="list-style-type: none"> <li>• <math>t</math>-test for paired samples</li> </ul>	<ul style="list-style-type: none"> <li>• <math>t</math>-test</li> <li>• Z test</li> </ul>	<ul style="list-style-type: none"> <li>• Repeated-measures ANOVA</li> </ul>	<ul style="list-style-type: none"> <li>• One-way ANOVA</li> <li>• <math>n</math>-way ANOVA</li> </ul>

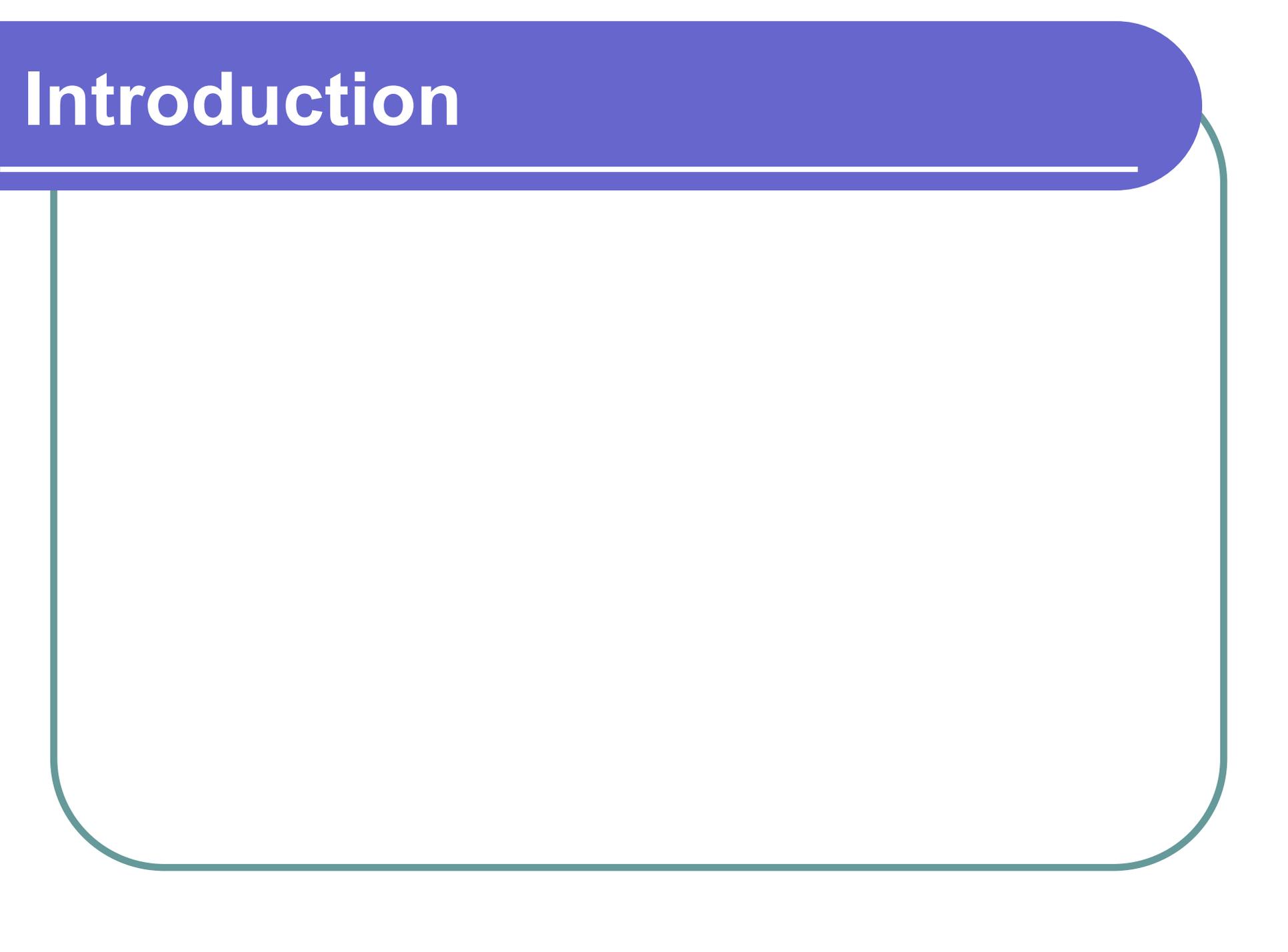
# Example – Topic 5



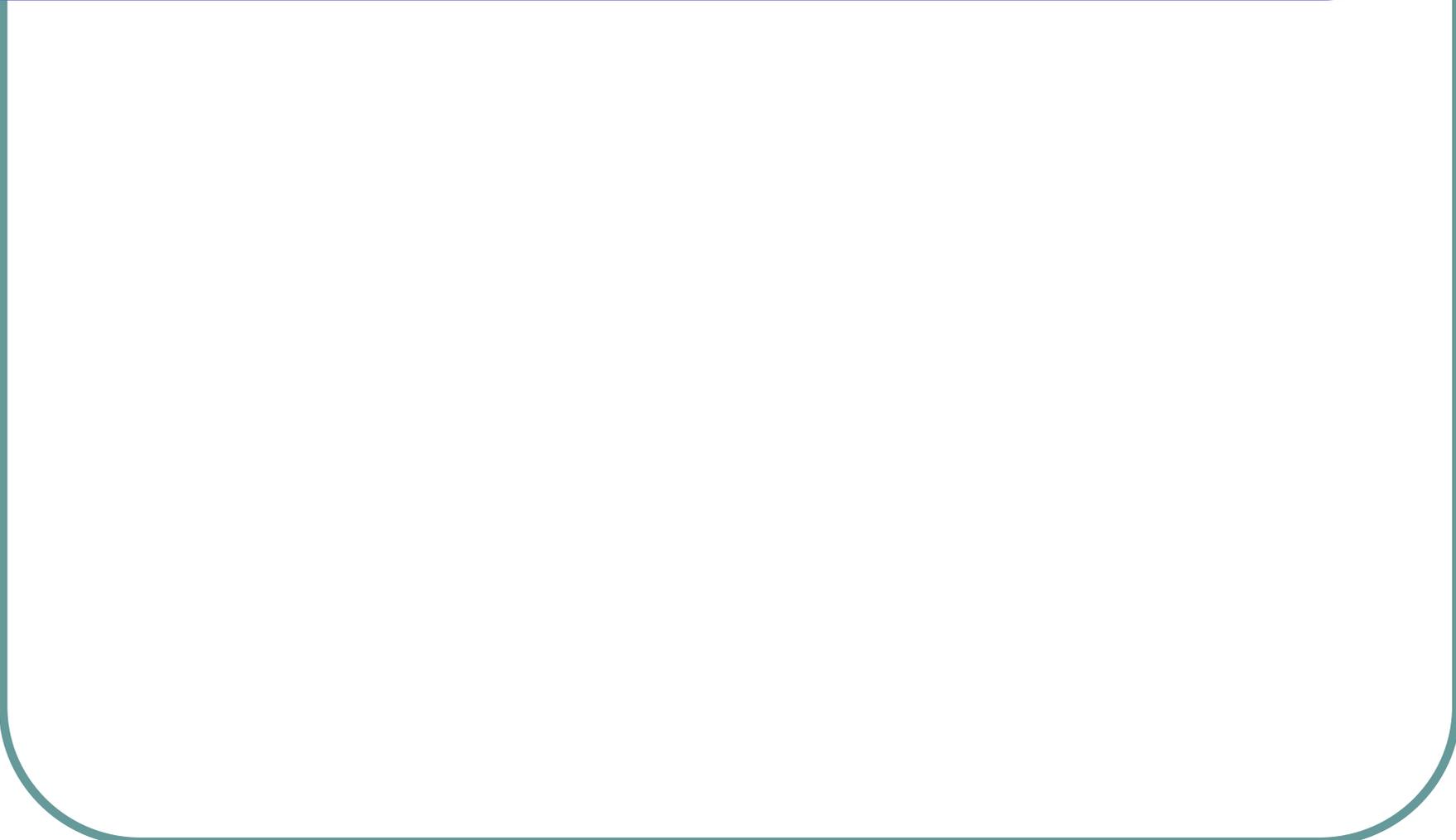
# Chapter 1 - Introduction

1. Introduction
2. Background
3. Problem Statement
4. Research Objectives
5. Research Questions
6. Significance of the Study
7. Definition of Key Terms
8. Organization of the chapters

# Introduction



# Problem Statement



# Research Question & Objective

RO1 To study the relationship of Attitude on Intention.

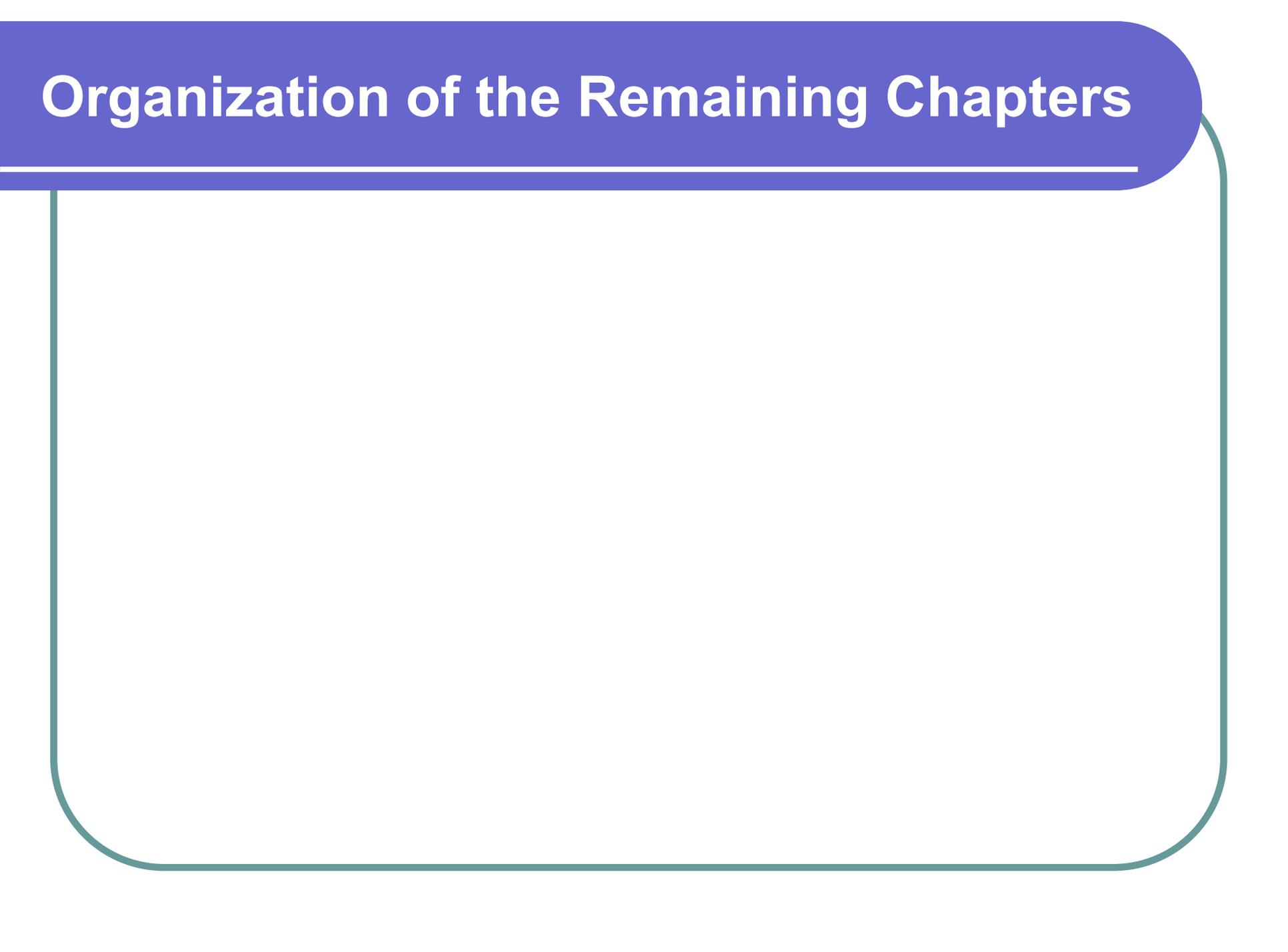
RQ1 What is the effect of Attitude on Intention?

# Significance of the Study

# Definition of key terms

- Attitude is a function of cognitive beliefs and indicates a positive or negative feeling about performing a specific behavior (Fishbein & Ajzen, 1975).
- The TPB considers behavior intention to be the best indicator of behavior, as it expresses the effort that individuals are prepared to make to carry out a given action (Ajzen, 1991). Behavior intention is therefore in relation to attitude, the subjective norm and perceived control (Ajzen, 1991; Taylor & Todd, 1995).

# Organization of the Remaining Chapters



# Chapter 2 – Literature Review

# Theory

- Theory of Planned Behavior, originally postulated by Ajzen (1991), is an extension of the theory of reasoned action (Fishbein and Ajzen, 1975). TPB is a widely used framework for predicting the relationship between an individual's beliefs, intentions, and behavior through three different determinants: subjective norm (SN), attitude and PBC.
- Attitude is a function of cognitive beliefs and indicates a positive or negative feeling about performing a specific behavior (Fishbein and Ajzen, 1975).

# Theory

Uses and Gratifications Theory has been regarded as one of the most influential theories in the study of mass communication media as, unlike other approaches or theories, it has enabled better understanding of the needs covered by communication content and the gratifications brought to mass media audiences. Thus the theory enables examination of the medium's functions from the consumer perspective to discover what the medium is used for (McQuail, 1995) and therefore what needs and desires it is able to meet (Anderson & Meyer, 1975). The basic premise of this approach then, is that individuals expose themselves to the medium to satisfy a set of needs that motivate the audience to actively seek, in that medium, gratification of their specific needs (Anderson & Meyer, 1975; Katz et al., 1974).

# Literature Review

- Users who participate in friend social networks can also develop affective ties with other participants (Gruen et al., 2006) which in turn influence their attitude (Chang & Zhu, 2011; Kuss & Griffiths, 2011; Kim et al., 2011). The search for social support in the network helps to generate more positive attitudes towards that network (Chang and Zhu, 2011; Kim et al., 2011). Thus the study by Kim et al. (2011) finds that social support and convenience motivations have a significant effect on Korean social network sites user attitudes. Chang and Zhu (2011) conclude that the motivations of connecting with old friends and meeting new friends are strong predictors of the attitudes of post-adopters towards social network sites use. The literature review in other study contexts also shows that social factors influence individual attitudes towards a given medium or service (Hsu & Lu, 2004). Therefore it is proposed that sociability motivations for being accepted by a group influence attitude towards social networks:

H1: Sociability motivation influences attitude towards friend social network use.

# Literature Review

- Attitude is a function of cognitive beliefs and indicates a positive or negative feeling about performing a specific behavior (Fishbein and Ajzen, 1975). Alarcón-del-Amo et al. (2014), Al-Debei et al. (2013), Baker and White (2010), Hsu et al. (2014), Ruiz-Mafe et al. (2014), and Tariq et al. (2017) have found that there is a significant effect between attitude and intention to use SNS. In addition, this positive relationship was also found among users who follow brands on Twitter (Chu et al., 2016) and among users with intentions to post selfies on Instagram (Kim et al., 2016). Therefore, and based on these empirical studies, these relationships are also expected to occur within the context of the SNS of clothing brands. Thus, the following hypothesis is proposed:

H5: Attitude toward has a positive effect on intention to use

# Chapter 3 - Methodology

1. Research Design
2. Study Population, Sampling and Unit of Analysis
3. Variables and Measurement
4. Data Collection
5. Data Preparation
6. Techniques of analysis that may be used

# Measurement

- Attitude, subjective norm and perceived control were measured using the seven-point multi-item Likert scales (1 Strongly disagree; 7 Strongly agree) developed by Taylor and Todd (1995) and subsequently applied by Curras-Perez et al. (2014).
- Finally, intentions were measured on 4 items scales adapted from the loyalty scale proposed by Zeithaml et al. (1996) with seven-point multi-item Likert scales (1 Strongly disagree; 7 Strongly agree) and used more recently by Curras-Perez et al. (2014).

# Theory

Theory of Planned Behavior, originally postulated by Ajzen (1991), is an extension of the theory of reasoned action (Fishbein and Ajzen, 1975). TPB is a widely used framework for predicting the relationship between an individual's beliefs, intentions, and behavior through three different determinants: subjective norm (SN), attitude and PBC.

Attitude is a function of cognitive beliefs and indicates a positive or negative feeling about performing a specific behavior (Fishbein and Ajzen, 1975).

# Literature Review

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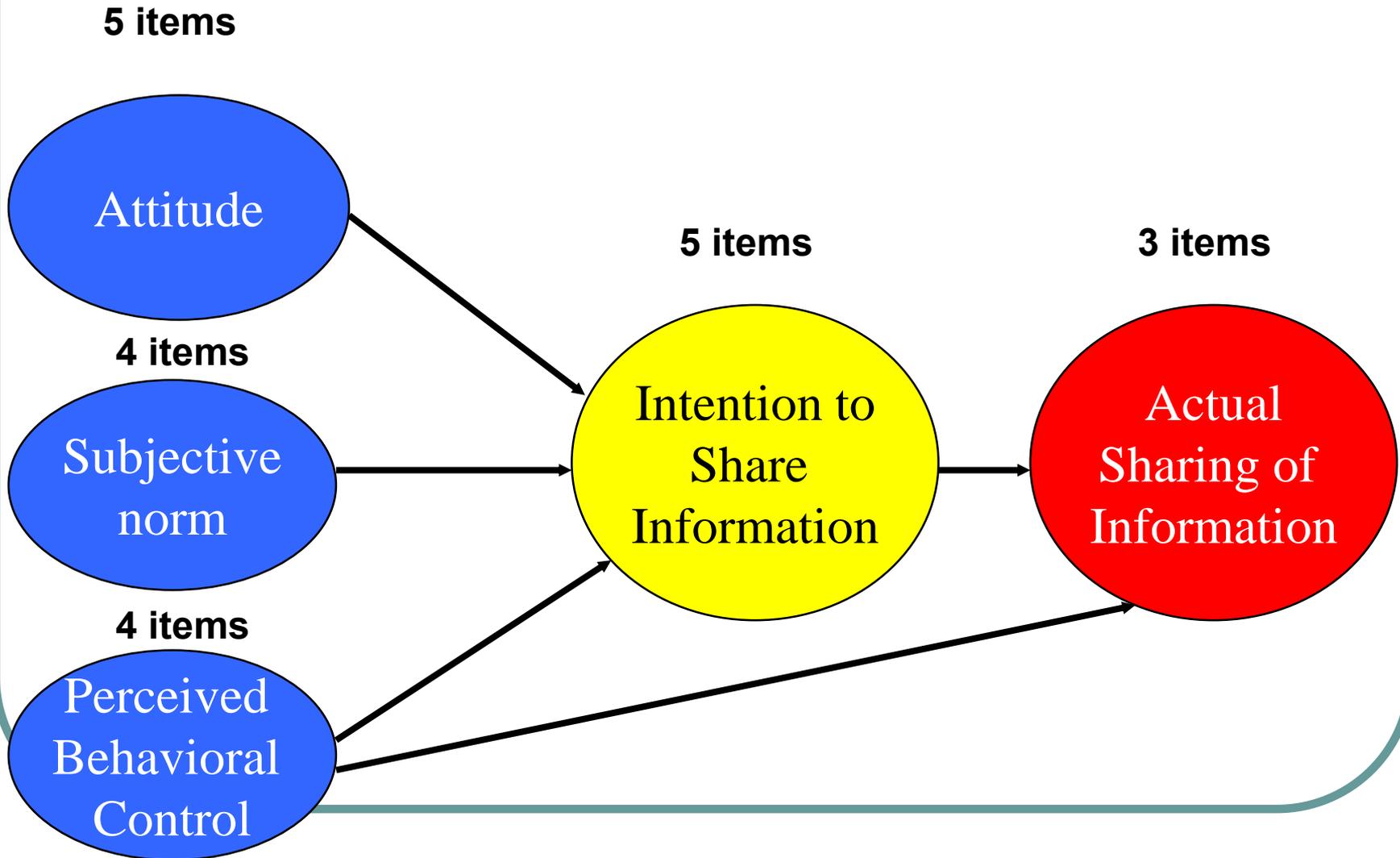
# Chapter 3 – Methodology

1. Research Design
2. Study Population, Sampling and Unit of Analysis
3. Variables and Measurement
4. Data Collection
5. Data Preparation
6. Techniques of analysis that may be used

# Chapter 4 – Data Analysis

1. Profile of respondents (**Frequencies**)
2. Descriptive of the main variables (**Descriptive**)
3. Reliability of the Measures (**Reliability Analysis**)
4. Correlations among the Variables (**Correlations**)
5. Testing Relationships (**Regression**)

# Research Model



# Reliability - Command

The screenshot displays the SPSS Data Editor interface with the 'Reliability Analysis' command selected in the 'Analyze' menu. The background shows a data table with columns: Gender, Age, Organization, Work, Department, Position, Education, and Reward1. The 'Reliability Analysis' dialog box is open, showing a list of items (Ec1, Ec2, Ec3, Sn1, Sn2, Sn3, Sn4, Intent1, Intent2, Intent3) on the left and a list of items (Att1, Att2, Att3, Att4, Att5) on the right. The 'Model' is set to 'Alpha'. The 'Reliability Analysis: Statistics' dialog box is also open, showing options for Descriptives for (Item, Scale, Scale if item deleted), Inter-Item (Correlations, Covariances), Summaries (Means, Variances, Covariances, Correlations), ANOVA Table (None, F test, Friedman chi-square, Cochran chi-square), Hotelling's T-square, Tukey's test of additivity, and Intraclass correlation coefficient. The 'Model' is set to 'Two-Way Mixed' and the 'Type' is 'Consistency'. The 'Confidence interval' is set to '95%' and the 'Test value' is '0'.

Gender	Age	Organization	Work	Department	Position	Education	Reward1
1	26	2	2	4	2	3	3
2	48	17	24	9	5	4	2
3	35	5	9	1	3	3	3
4	10	1	1	4	1	2	5
5	25	6	8	3	3	3	5
6	25	1	1	8	2	3	2
7	25	1	1	8	8	3	2
8	8	1	23	10	4	3	3
9	9	2	3	4	1	2	2
10	10	1	25	4	4	3	2
11	11	2	6	2	2	3	3
12	12	2	25	10	5	4	2
13	13	2	3	4	1	2	2
14	14	2	2	2	2	3	3
15	15	2	25	10	5	4	2
16	16	2	25	10	5	4	2
17	17	1	2	26	3	2	2
18	18	2	1	23	3	2	2
19	19	2	1	29	4	2	2
20	20	1	1	44	10	2	2
21	21	2	1	25	3	2	2
22	22	2	1	32	2	2	2
23	23	2	1	40	10	2	2
24	24	1	1	27	3	3	2

# Reliability

Question:

How reliable are our instruments?

## Reliability Statistics

Cronbach's Alpha	N of Items
.977	5

## Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Att1	15.25	6.681	.973	.965
Att2	15.26	6.560	.925	.972
Att3	15.24	6.906	.929	.972
Att4	15.21	6.825	.900	.975
Att5	15.25	6.555	.935	.970

# Reliability

## Reliability Statistics

Cronbach's Alpha	N of Items
.912	4

## Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Sn1	11.20	4.243	.761	.900
Sn2	11.03	4.135	.855	.868
Sn3	11.00	4.021	.856	.867
Sn4	11.21	4.250	.736	.909

# Reliability

## Reliability Statistics

Cronbach's Alpha	N of Items
.919	4

## Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Pbc1	10.48	4.984	.814	.895
Pbc2	10.45	4.793	.826	.892
Pbc3	10.43	5.042	.809	.897
Pbc4	10.40	5.246	.814	.897

# Reliability

## Reliability Statistics

Cronbach's Alpha	N of Items
.966	5

## Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Intent1	15.28	6.591	.951	.951
Intent2	15.28	6.612	.888	.961
Intent3	15.29	6.553	.901	.959
Intent4	15.28	6.716	.877	.962
Intent5	15.24	6.445	.904	.958

# Table in Report

Variable	N of Item	Item Deleted	Alpha
Attitude	5	-	0.977
SN	4	-	0.912
Pbcontrol	4	-	0.919
Intention	5	-	0.966
Actual	3	-	0.933

# Example - Recoding

	<b>Perceived Enjoyment</b>							
<b>PE1</b>	The actual process of using Instant Messenger is pleasant	1	2	3	4	5	6	7
<b>PE2</b>	I have fun using Instant Messenger	1	2	3	4	5	6	7
<b>PE3</b>	Using Instant Messenger bores me	1	2	3	4	5	6	7
<b>PE4</b>	Using Instant Messenger provides me with a lot of enjoyment	1	2	3	4	5	6	7
<b>PE5</b>	I enjoy using Instant Messenger	1	2	3	4	5	6	7

# Recoding

IM SAMPLE.sav - SPSS Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

20 : rc2

	id	rc3	pcm1	pcm2
1	1	6	5	
2	2	6	6	
3	3	7	7	
4	4	4	5	
5	5	4	5	
6	6	5	5	
7	7	5	5	
8	8	7	7	
9	9	7	6	
10	10	7	7	
11	11	4	5	
12	12	6	4	
13	13	3	5	
14	14	7	5	
15	15	4	4	
16	16	4	3	
17	17	3	4	
18	18	5	7	
19	19	6	6	
20	20	5	7	
21	21	6	4	
22	22	5	4	
23	23	4	4	

**Recode into Same Variables**

Numeric Variables: pe3

Old and New Values...

If... (optional case selection condition)

**Recode into Same Variables: Old and New Values**

Old Value

- Value: [ ]
- System-missing
- System- or user-missing
- Range: [ ] through [ ]
- Range: Lowest through [ ]
- Range: [ ] through highest
- All other values

New Value

- Value: [ ]
- System-missing

Old → New:

- 1 → 7
- 2 → 6
- 3 → 5
- 4 → 4
- 5 → 3
- 6 → 2
- 7 → 1

start

SPSS Processor is ready

8:33 PM

# Recoding

IM SAMPLE.sav - SPSS Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

20 : rc2

	id	rc3	pcm1	pcm2
1	1	6	5	
2	2	6	6	
3	3	7	7	
4	4	4	5	
5	5	4	5	
6	6	5	5	
7	7	5	5	
8	8	7	7	
9	9	7	6	
10	10	7	7	
11	11	4	5	
12	12	6	4	
13	13	3	5	
14	14	7	5	
15	15	4	4	
16	16	4	3	
17	17	3	4	
18	18	5	7	
19	19	6	6	
20	20	5	7	
21	21	6	4	
22	22	5	4	
23	23	4	4	

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- Range: Lowest through [ ]
- Range: [ ] through highest
- All other values

New Value

- Value: [ ]
- System-missing

Old → New:

- 1 → 7
- 2 → 6
- 3 → 5
- 4 → 4
- 5 → 3
- 6 → 2
- 7 → 1

start

SPSS Processor is ready

8:33 PM

# Data before Transformation

The screenshot displays the SPSS Data Editor window with a data table and the 'Compute Variable' dialog box open. The data table has columns labeled 'Pbc1', 'Share1', 'Share2', 'Share3', and several 'var' columns. The 'Compute Variable' dialog box is configured to create a new variable named 'Attitude' with the numeric expression  $\text{mean}(\text{att1}, \text{att2}, \text{att3}, \text{att4}, \text{att5})$ .

	Pbc1	Share1	Share2	Share3	var							
1	5	4	4	4								
2	3	5	5	5								
3	4	4	4	3								
4	3	5	5	5								
5	5	4	4	4								
6	4	3	3	3								
7	3	5	5	5								
8	5	3	4	4								
9	4	4	4	5								
10	4	4	4	4								
11	3	4	5	4								
12	4	4	5	5								
13	3	4	5	4								
14	4	5	4	4								
15	4	4	4	4								
16	3	3	3	3								
17	3	3	3	3								
18	4	4	4	4								
19	3	4	3	4								
20	2	2	2	2								
21	2	2	2	2								
22	3	3	3	3								
23	4	4	3	3								
24	4	4	3	3								
25	4	4	5	4								
26	4	4	5	4								
27	4	5	5	4								
28	5	5	5	5								
29	5	5	4	4								
30	4	4	3	4								
31	3	3	3	3								
32	3	3	4	4								
33	4	4	5	5								
34	3	3	4	4								
35	3	3	4	4								
36	4	5	4	4								
37	3	3	4	4								
38	3	4	4	3								
39	4	4	4	4								
40	5	5	5	5								
41	3	3	3	3								

**Compute Variable** dialog box configuration:

- Target Variable: Attitude
- Numeric Expression:  $\text{mean}(\text{att1}, \text{att2}, \text{att3}, \text{att4}, \text{att5})$
- Function group: All
- Functions and Special Variables: (empty)
- If... (optional case selection condition): (empty)

# Data after Transformation

DATA.sav - SPSS Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

1 : filter\_\$ 1

	Share1	Share2	Share3	Attitude	subjective	Pbcontrol	Intention	Actual	var	var	var	var	var	var
1	4	4	4	4.40	3.75	4.75	4.20	4.00						
2	5	5	5	4.00	4.25	3.50	4.40	5.00						
3	4	4	3	4.00	3.75	3.50	4.00	3.67						
4	5	5	5	4.60	3.75	3.00	5.00	5.00						
5	4	4	4	4.80	3.75	5.00	4.60	4.00						
6	3	3	3	4.20	3.75	4.50	4.00	3.00						
7	5	5	5	4.80	5.00	3.00	5.00	5.00						
8	3	4	4	2.80	3.50	4.50	3.20	3.67						
9	4	4	5	4.00	3.75	3.50	4.00	4.33						
10	4	4	4	4.20	3.75	3.50	4.00	4.00						
11	4	5	4	4.80	3.75	3.00	5.00	4.33						
12	4	5	5	4.00	4.25	4.75	4.40	4.67						
13	4	5	4	4.00	3.75	3.50	4.00	4.33						
14	5	4	4	4.00	4.00	3.50	4.00	4.33						
15	4	4	4	4.00	3.75	4.00	3.80	4.00						
16	4	5	4	4.00	3.75	3.00	4.00	4.33						
17	4	5	4	4.00	3.75	3.00	4.00	4.33						
18	4	5	4	4.00	4.00	4.00	4.00	4.33						
19	4	5	4	4.00	3.75	3.50	3.60	4.33						
20	4	5	4	3.80	3.75	2.00	3.20	4.33						
21	5	5	5	5.00	4.00	2.00	4.00	5.00						
22	5	5	5	4.80	5.00	3.00	5.00	5.00						
23	4	5	4	4.00	3.75	3.50	4.00	4.33						
24	4	5	4	4.00	4.00	3.50	4.00	4.33						
25	4	4	4	4.00	3.75	4.25	3.80	4.00						
26	4	4	4	4.20	3.75	4.25	4.00	4.00						
27	4	4	5	4.00	3.75	4.50	4.00	4.33						
28	4	4	5	3.80	3.00	5.00	4.00	4.33						
29	4	4	5	4.00	3.75	4.50	4.00	4.33						
30	4	4	5	3.80	4.25	3.75	4.00	4.33						
31	4	4	4	4.00	3.75	3.00	4.00	4.00						
32	4	4	5	4.00	3.75	3.50	4.00	4.33						
33	4	4	5	2.80	3.25	4.50	3.80	4.33						
34	3	3	4	3.00	3.00	3.50	3.20	3.33						
35	3	4	3	3.00	3.00	3.50	3.20	3.33						
36	4	4	4	4.20	3.75	4.25	4.00	4.00						
37	4	4	5	4.00	4.00	3.50	4.00	4.33						
38	4	4	5	4.00	3.75	3.50	4.00	4.33						
39	5	4	4	4.00	4.00	4.00	4.20	4.33						
40	5	5	5	4.00	3.00	5.00	4.80	5.00						
41	5	5	5	5.00	5.00	3.00	5.00	5.00						

Data View Variable View /

SPSS Processor is ready

# Frequencies - Command

The screenshot shows the SPSS Data Editor interface with the 'Frequencies' command dialog box open. The background displays a data table with columns: Id, Age, Organization, Work, Department, Position, Education, and Reward1. The 'Frequencies' dialog box has 'Id', 'response', 'Age', 'Organization', 'Work', 'Education', 'Reward1', 'Reward2', 'Reward3', 'Recip1', and 'Recip2' in the left list, and 'Gender', 'Department', and 'Position' in the 'Variable(s):' list. The 'Display frequency tables' checkbox is checked. The 'Frequencies: Charts' sub-dialog box is also open, showing 'Bar charts' selected as the chart type and 'Frequencies' selected as the chart values.

Id	Age	Organization	Work	Department	Position	Education	Reward1
1	26	2	2	4	2	3	3
2					5	4	2
3					3	3	3
4					1	2	5
5					3	3	5
6					2	3	2
7					3	3	2
8	8	1			4	3	3
9	9	2			1	2	2
10	10	1			4	3	2
11	11	2			2	3	3
12	12	2			5	4	2
13	13	2			4	3	3
14	14	2			1	2	2
15	15	2	1		4	3	2
16	16	2	1		4	5	3
17	17	1	2		2	3	2
18	18	2	1		1	2	2
19	19	2	1		2	3	2
20	20	1	1		4	3	2
21	21	2	1		1	2	2
22	22	2	1		3	3	2
23	23	2	1		3	3	2
24	24	1	1		2	3	2

# Frequencies

## Question:

1. Is our sample representative?
2. Data entry error

### Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	144	75.0	75.0	75.0
Female	48	25.0	25.0	100.0
Total	192	100.0	100.0	

### Current Position

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Technician	34	17.7	17.7	17.7
Engineer	66	34.4	34.4	52.1
Sr Engineer	54	28.1	28.1	80.2
Manager	32	16.7	16.7	96.9
Above manager	6	3.1	3.1	100.0
Total	192	100.0	100.0	

# Table in Report

	Frequency	Percentage
<b>Gender</b>		
Male	144	75.0
Female	48	25.0
<b>Position</b>		
Technician	34	17.7
Engineer	66	34.4
Sr Engineer	54	28.1
Manager	32	16.7
Above manager	6	3.1

# Descriptives - Command

The screenshot shows the SPSS Data Editor interface with the 'Descriptives' command menu open. The background data table is as follows:

Id	Age	Organization	Work	Department	Position	Education	Reward1
1	26	2	2	4	2	3	3
2	9	5	4	9	5	4	2
3	1	3	3	1	3	3	3
4	4	1	2	4	1	2	5
5	3	3	3	3	3	3	5
6	8	2	3	8	2	3	2
7	8	3	3	8	3	3	2
8	10	4	3	10	4	3	3
9	4	1	2	4	1	2	2
10	4	4	3	4	4	3	2
11	2	2	3	2	2	3	3
12	1	50	15	25	10	5	4
13	2	2	3	10	5	4	2
14	3	4	3	3	4	3	3
15	6	1	2	6	1	2	2
16	1	4	3	1	4	3	2
17	2	4	5	2	4	5	3
18	1	2	3	1	2	3	2
19	4	1	2	4	1	2	2
20	2	2	3	2	2	3	2
21	7	4	3	7	4	3	2
22	4	1	2	4	1	2	2
23	5	3	3	5	3	3	2
24	4	3	3	4	3	3	2
25	1	2	3	1	2	3	2

The 'Descriptives' dialog box shows the following variables selected:

- filter\_\$
- reciprocal
- selfworth
- ec
- climate
- Level
- ShareL
- randz
- Age
- Organization
- Work
- Attitude
- Norm
- pbz
- Intention
- Actual

The 'Descriptives: Options' dialog box shows the following options checked:

- Mean
- Std. deviation
- Range
- Kurtosis
- Variable list (Display Order)

Other options in the 'Descriptives: Options' dialog include Sum, Minimum, Maximum, S.E. mean, Skewness, and Display Order (Alphabetic, Ascending means, Descending means).

# Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std.	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Age	192	19	53	33.39	8.823	.667	.175	-.557	.349
Years working in the organization	192	1	18	5.36	4.435	1.448	.175	1.333	.349
Total years of working experience	192	1	28	9.04	7.276	1.051	.175	-.025	.349
Attitude	192	2.00	5.00	3.8104	.64548	-.480	.175	.242	.349
subjective	192	2.00	5.00	3.7031	.67034	-.101	.175	.755	.349
Pbcontrol	192	2.00	5.00	3.4792	.73672	.015	.175	-.028	.349
Intention	192	2.00	5.00	3.8188	.63877	-.528	.175	.687	.349
Actual	192	2.33	5.00	4.0625	.58349	-.361	.175	-.328	.349
Valid N (listwise)	192								

## Question:

1. Is there variation in our data?
2. What is the level of the phenomenon we are measuring?

# Table in Report

	Mean	Std. Deviation
Attitude	3.81	0.65
Subjective Norm	3.70	0.67
Behavioral Control	3.48	0.74
Intention	3.82	0.64
Actual	4.06	0.58



# Correlation (Interval/ratio)

**Question:**

**Are the variables related?**

**Correlations**

		Attitude	subjective	Pbcontrol	Intention	Actual
Attitude	Pearson Correlation	1	.697**	.212**	.808**	.606**
	Sig. (2-tailed)		.000	.003	.000	.000
	N	192	192	192	192	192
subjective	Pearson Correlation	.697**	1	-.052	.653**	.552**
	Sig. (2-tailed)	.000		.471	.000	.000
	N	192	192	192	192	192
Pbcontrol	Pearson Correlation	.212**	-.052	1	.281**	.031
	Sig. (2-tailed)	.003	.471		.000	.665
	N	192	192	192	192	192
Intention	Pearson Correlation	.808**	.653**	.281**	1	.817**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	192	192	192	192	192
Actual	Pearson Correlation	.606**	.552**	.031	.817**	1
	Sig. (2-tailed)	.000	.000	.665	.000	
	N	192	192	192	192	192

\*\* . Correlation is significant at the 0.01 level (2-tailed).

# Table Presentation

	Attitude	subjective	Pbcontrol	Intention	Actual
Attitude	1				
subjective	.740**	1			
Pbcontrol	.201**	-.047	1		
Intention	.885**	.662**	.326**	1	
Actual	.660**	.553**	.059	.805**	1

\*p < 0.05, \*\*p < 0.01

# Command

DATA.sav - SPSS Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

1 :

	Share1	Share2
1	4	
2	5	
3	4	
4	5	
5	4	
6	3	
7	5	
8	3	
9	4	
10	4	
11	4	
12	4	
13	4	

Reports  
Descriptive Statistics  
Tables  
Compare Means  
General Linear Model  
Mixed Models  
Correlate  
Regression  
Loglinear  
Classify  
Data Reduction  
Scale  
Nonparametric Tests  
Time Series  
Survival  
Multiple Response  
Missing Value Analysis...  
Complex Samples

Linear...  
Curve Estimation...  
Binary Logistic...  
Multinomial Logistic...  
Ordinal...  
Probit...  
Nonlinear...  
Weight Estimation...  
2-Stage Least Squares...  
Optimal Scaling...

Linear Regression

Task [Id]  
Early and Late Respo  
Gender [Gender]  
Age [Age]  
Years working in the o  
Total years of working  
Department [Departm  
Current Position [Posit  
Level of Education [E  
Reward1 [Reward1]  
Reward2 [Reward2]  
Reward3 [Reward3]  
Recip1 [Recip1]  
Recip2 [Recip2]  
Recip3 [Recip3]  
Recip4 [Recip4]  
Recip5 [Recip5]  
Sw1 [Sw1]  
Sw2 [Sw2]  
Sw3 [Sw3]  
Sw4 [Sw4]  
Sw5 [Sw5]  
Ec1 [Ec1]

Dependent:  
Intention

Block 1 of 1

Independent(s):  
Attitude  
subjective  
Pbcontrol

Method: Enter

Selection Variable:  
Case Labels:  
WLS Weight:

Statistics... Plots... Save... Options...

Linear Regression: Statistics

Regression Coefficients

Estimates  
 Confidence intervals  
 Covariance matrix

Model fit  
 R squared change  
 Descriptives  
 Part and partial correlations  
 Collinearity diagnostics

Residuals

Durbin-Watson  
 Casewise diagnostics

Outliers outside: 3 standard deviations  
All cases

Continue  
Cancel  
Help

Linear Regression: Plots

\*ZRESID  
\*DRESID  
\*ADJPRED  
\*SRESID  
\*SDRESID

Scatter 1 of 1

Y: \*SRESID  
X: DEPENDNT

Standardized Residual Plots

Histogram  
 Normal probability plot

Produce all partial plots

Continue  
Cancel  
Help

# Multiple Regression

## Question:

Which variables can explain the intention to share?

**Variables Entered/Removed<sup>b</sup>**

Model	Variables Entered	Variables Removed	Method
1	Pbcontrol, subjective, Attitude	.	Enter

a. All requested variables entered.

b. Dependent Variable: Intention

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.832 <sup>a</sup>	.693	.688	.35703	1.501

a. Predictors: (Constant), Pbcontrol, subjective, Attitude

b. Dependent Variable: Intention

# Multiple Regression

**ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53.968	3	17.989	141.127	.000 <sup>a</sup>
	Residual	23.964	188	.127		
	Total	77.933	191			

a. Predictors: (Constant), Pbcontrol, subjective, Attitude

b. Dependent Variable: Intention

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.191	.197		.971	.333		
	Attitude	.601	.059	.607	10.103	.000	.453	2.210
	subjective	.227	.056	.238	4.043	.000	.472	2.116
	Pbcontrol	.143	.037	.165	3.821	.000	.877	1.140

a. Dependent Variable: Intention

# Assumptions (Multicollinearity)

Collinearity Diagnostics<sup>a</sup>

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	Attitude	subjective	Pbcontrol
1	1	3.936	1.000	.00	.00	.00	.00
	2	.043	9.581	.00	.02	.10	.55
	3	.013	17.195	.91	.19	.02	.21
	4	.008	22.890	.09	.79	.88	.24

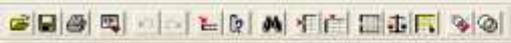
a. Dependent Variable: Intention

# Assumptions (Outliers)

**Casewise Diagnostics<sup>a</sup>**

Case Number	Std. Residual	Intention	Predicted Value	Residual
70	3.152	5.00	3.8748	1.12520
82	4.042	5.00	3.5570	1.44295
83	3.071	4.20	3.1037	1.09631
166	3.152	5.00	3.8748	1.12520
178	4.042	5.00	3.5570	1.44295
179	3.071	4.20	3.1037	1.09631

a. Dependent Variable: Intention



176 : Pbc4 4

	Climate4	Climate5	Climate6	Pbc1	Pbc2	Pbc3	Pbc4	It1	It2	It3	It4	It5	Share1	Share2	Share3	Attr
153	4	4	4	3	4	4	4	5	3	5	4	3	3	4	4	4
154	3	3	3	3							4	4	3	3	4	4
155	3	3	2	2							4	3	4	3	3	4
156	5	4	5	5							4	3	4	4	4	4
157	4	4	4	4							4	3	4	4	5	4
158	3	4	4	4							4	3	5	4	4	4
159	2	2	2	3							4	3	3	3	4	4
160	3	3	3	3							3	3	5	5	5	4
161	2	2	2	2							3	4	5	5	5	4
162	3	3	2	2							4	3	4	4	4	4
163	3	3	2	3							3	2	3	3	3	4
164	2	4	3	3							3	2	3	4	3	4
165	3	4	3	3							2	3	3	3	4	4
166	3	3	4	3							4	4	5	5	5	4
167	3	3	3	3							4	3	5	4	4	4
168	3	5	4	4							2	3	4	4	4	4
169	3	3	4	3							2	3	5	4	4	4
170	3	3	4	4							2	3	5	4	4	4
171	4	4	4	4							3	3	4	4	4	4
172	5	5	4	5							2	3	4	5	4	4
173	4	3	4	4							2	2	5	4	4	4
174	4	3	4	4							3	3	5	4	4	4
175	3	3	4	3							2	5	4	4	4	4
176	3	3	4	3							3	5	4	4	4	4
177	3	3	4	4							2	4	4	4	5	4
178	4	4	3	3							3	5	5	5	5	4
179	3	3	3	3							2	5	4	4	4	4
180	3	3	3	3							3	3	3	4	3	3
181	2	2	3	2							3	3	3	3	3	3
182	3	3	3	3							4	3	4	4	3	3
183	3	3	3	3							3	3	4	4	3	3
184	4	3	3	3							3	3	3	4	3	3
185	4	3	3	3							3	3	3	4	3	3
186	4	3	3	3							4	3	3	4	3	3
187	3	4	4	4							3	5	4	4	4	4
188	3	3	3	3	3	4	4	4	4	5	5	4	3	4	3	3
189	3	3	3	3	3	3	3	4	4	4	4	4	3	2	2	2
190	2	2	2	2	2	2	2	3	4	3	3	3	3	3	3	3
191	3	2	2	3	3	4	4	5	5	5	5	4	4	3	3	3
192	4	3	3	5	4	4	4	4	4	4	3	4	3	4	4	4
193																

**Select Cases**

Select

All cases

If condition is satisfied

IL... id\*\*= 70 and id\*\*= 82 and id\*\*= 83 an...

Random sample of cases

Example

Based on time or case range

Range

Use filter variable:

Unselected Cases Are

Filtered  Deleted

Current Status: Do not filter cases

OK Paste Reset Cancel Help

**Select Cases: if**

id\*\*= 70 and id\*\*= 82 and id\*\*= 83 and id\*\*= 166 and id\*\*= 178 and id\*\*= 179

Functions:

ABS(numexpr)  
 ANY(test value,value...)  
 ARSIN(numexpr)  
 ARTAN(numexpr)  
 CDFNORM(z,value)  
 CDFBERNOULLI(q,p)

Continue Cancel Help

# After Removing Outliers

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.900 <sup>a</sup>	.810	.807	.27373	1.725

a. Predictors: (Constant), Pbcontrol, subjective, Attitude

b. Dependent Variable: Intention

**ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58.261	3	19.420	259.182	.000 <sup>a</sup>
	Residual	13.637	182	.075		
	Total	71.898	185			

a. Predictors: (Constant), Pbcontrol, subjective, Attitude

b. Dependent Variable: Intention

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.067	.153		.441	.659		
	Attitude	.758	.050	.784	15.281	.000	.396	2.523
	subjective	.085	.047	.091	1.801	.073	.412	2.426
	Pbcontrol	.145	.029	.173	5.015	.000	.875	1.143

a. Dependent Variable: Intention

# Assumptions – Advanced Diagnostics (Hair et al., 2006)

**Residuals Statistics <sup>a</sup>**

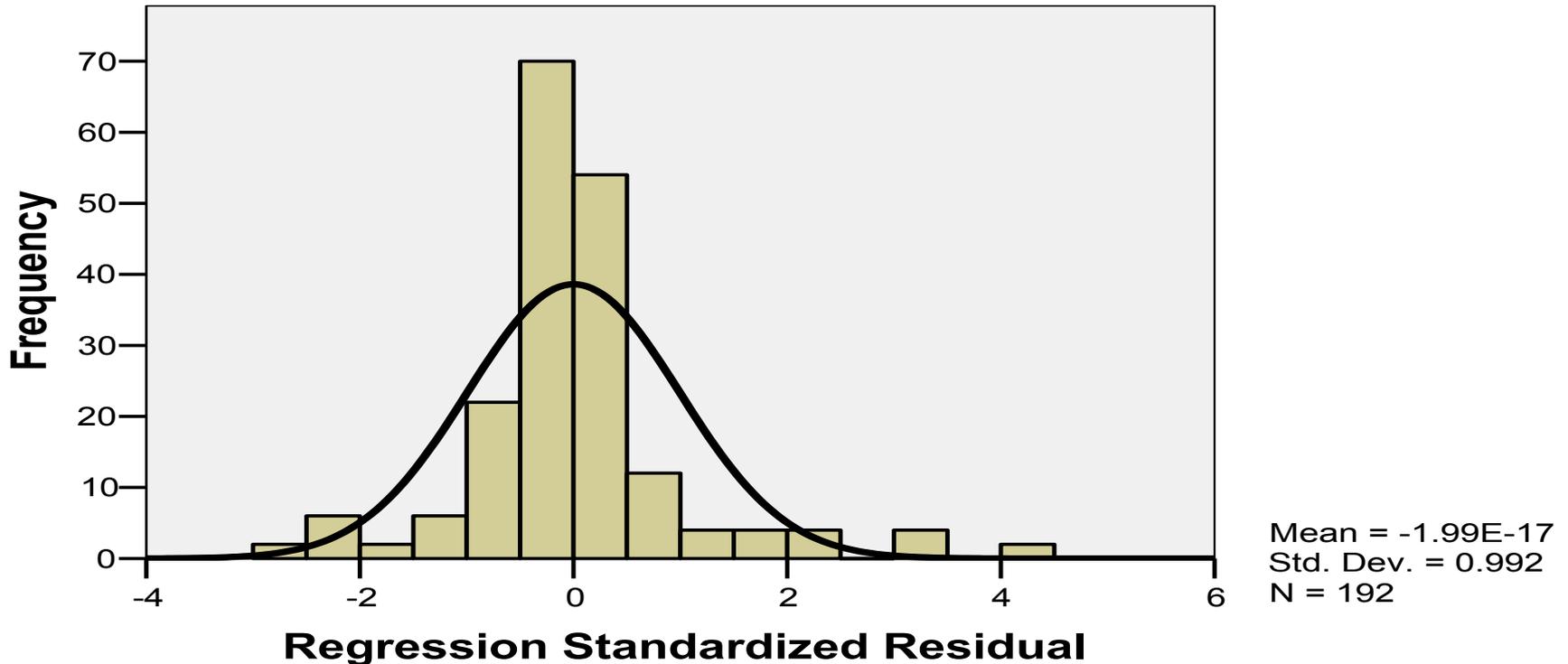
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.1329	4.9380	3.8188	.53156	192
Std. Predicted Value	-3.172	2.106	.000	1.000	192
Standard Error of Predicted Value	.027	.111	.048	.020	192
Adjusted Predicted Value	2.1423	4.9493	3.8179	.53167	192
Residual	-.96087	1.44295	.00000	.35421	192
Std. Residual	-2.691	4.042	.000	.992	192
Stud. Residual	-2.731	4.253	.001	1.012	192
Deleted Residual	-.98909	1.59761	.00086	.36911	192
Stud. Deleted Residual	-2.779	4.461	.004	1.031	192
Mahal. Distance	.130	17.495	2.984	3.453	192
Cook's Distance	.000	.485	.011	.051	192
Centered Leverage Value	.001	.092	.016	.018	192

a. Dependent Variable: Intention

# Assumptions (Normality)

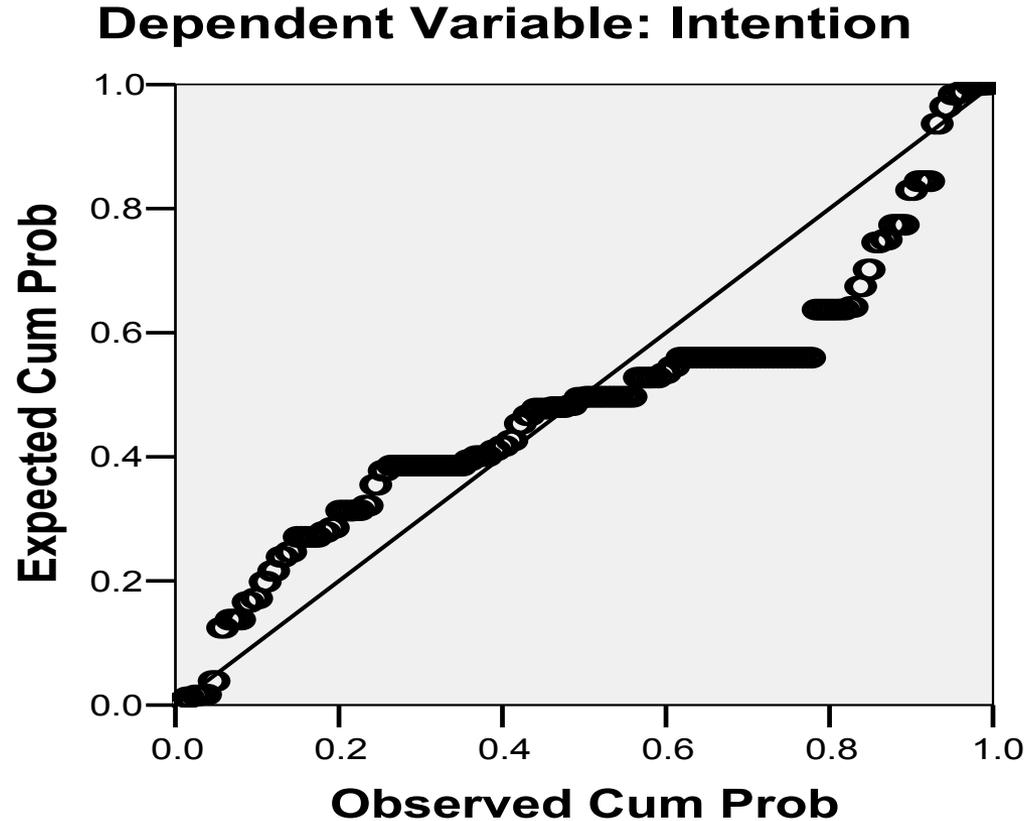
## Histogram

Dependent Variable: Intention



# Assumptions (Normality of the Error term)

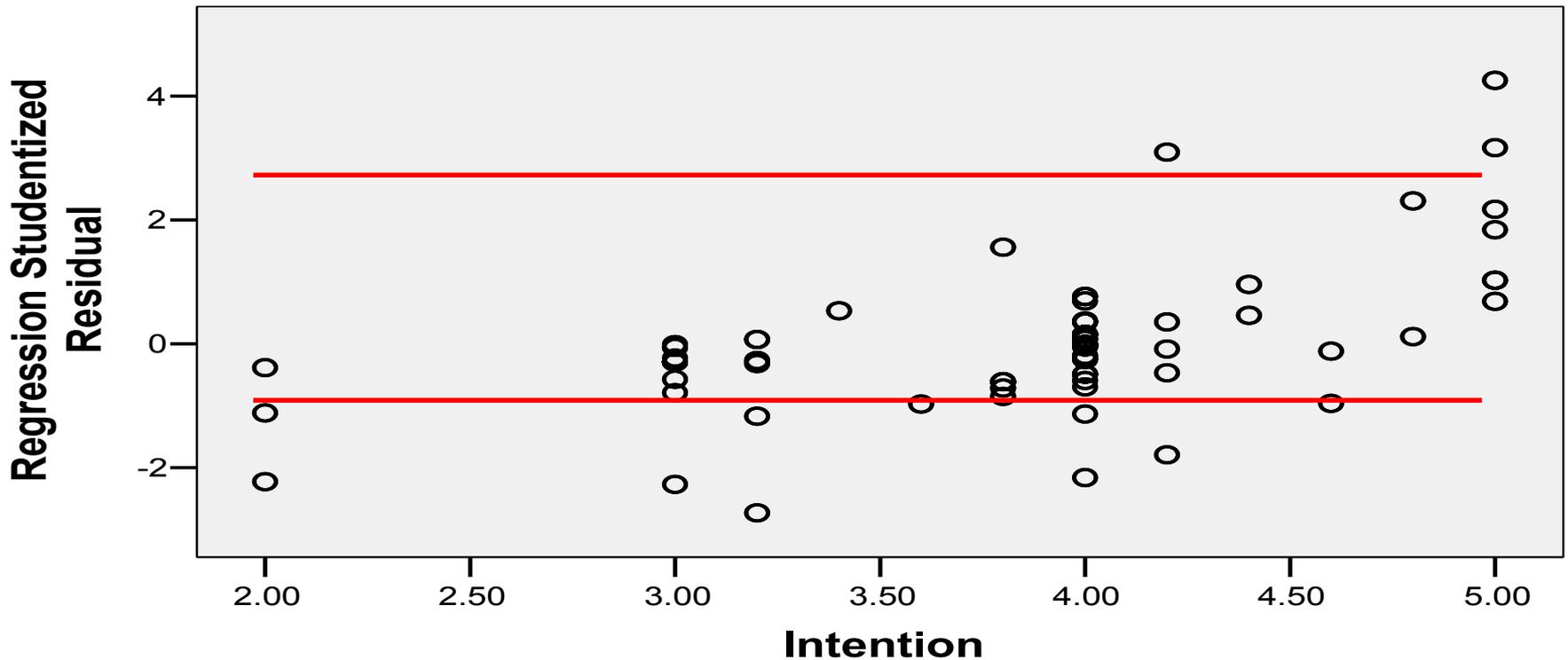
## Normal P-P Plot of Regression Standardized Residual



# Assumptions (Constant Variance)

## Scatterplot

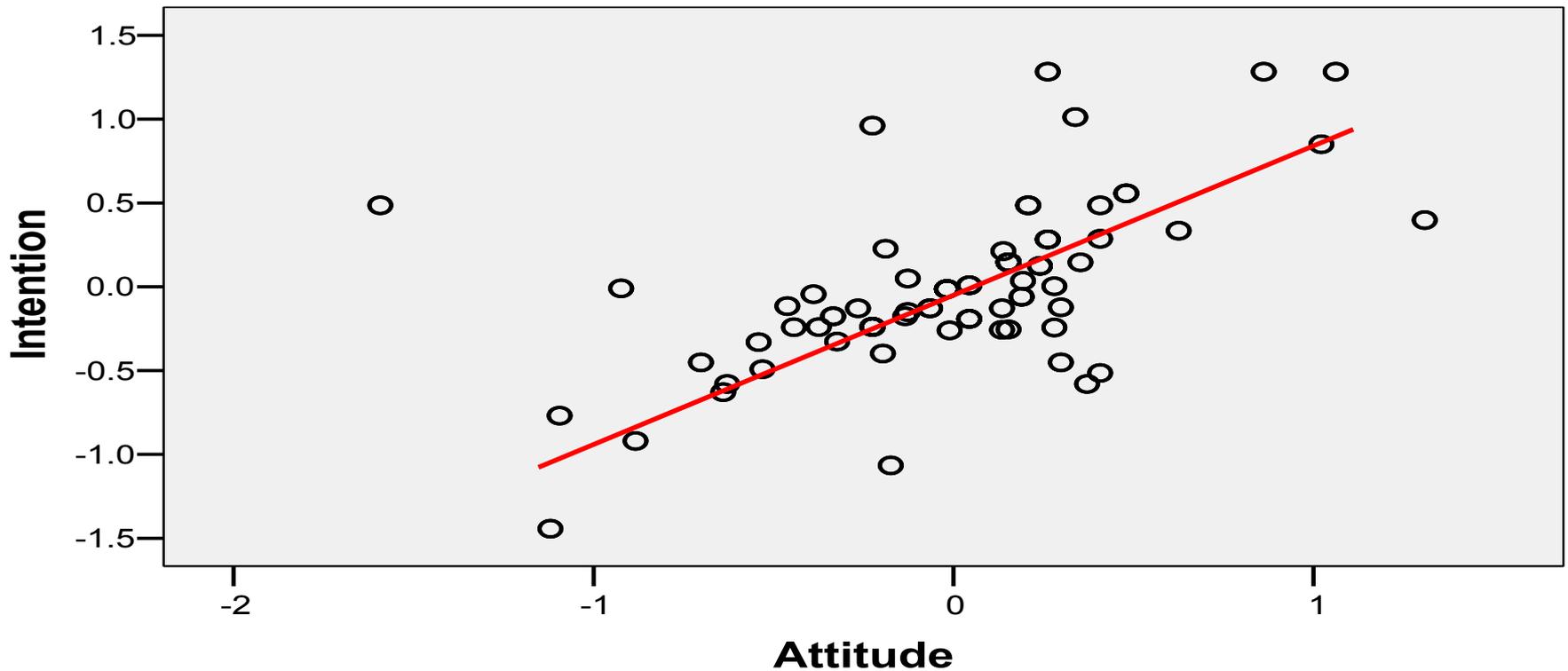
Dependent Variable: Intention



# Assumptions (Linearity)

## Partial Regression Plot

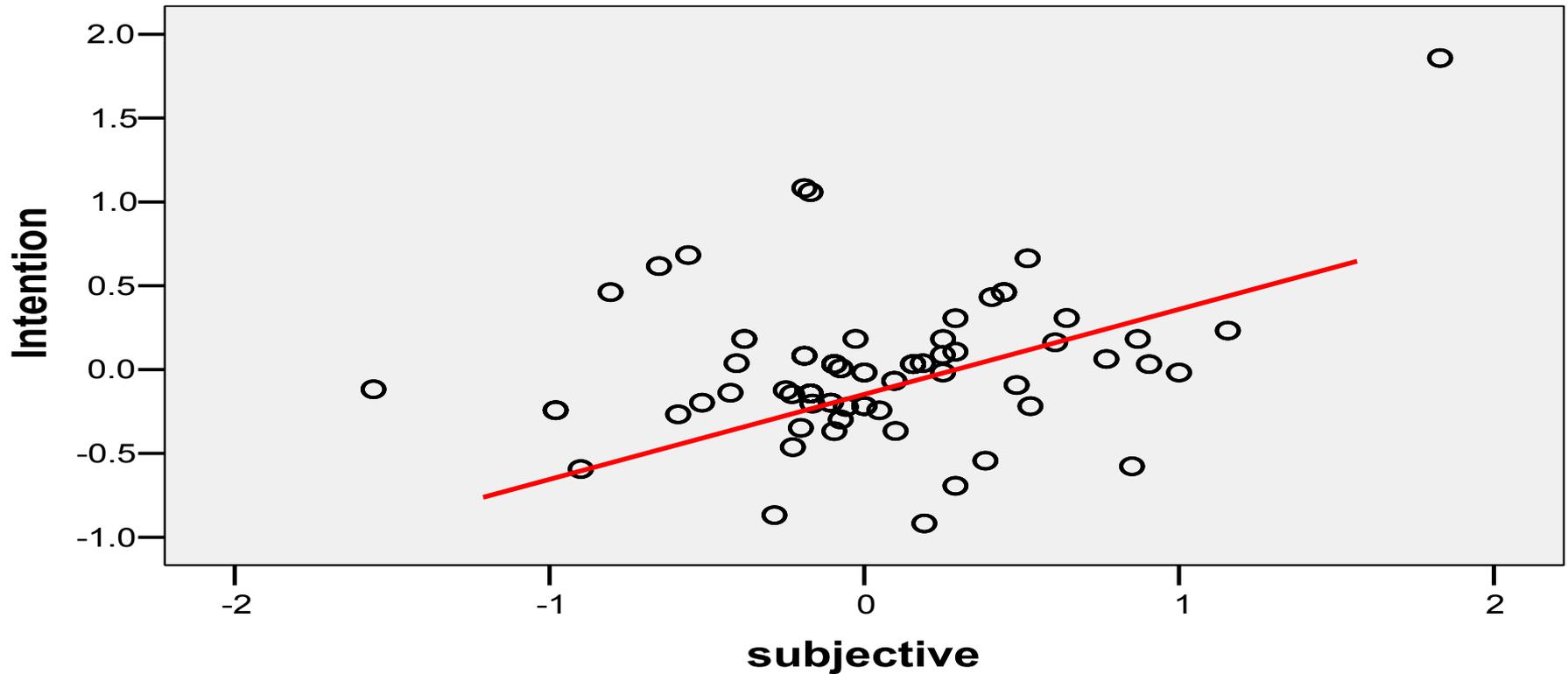
Dependent Variable: Intention



# Assumptions (Linearity)

## Partial Regression Plot

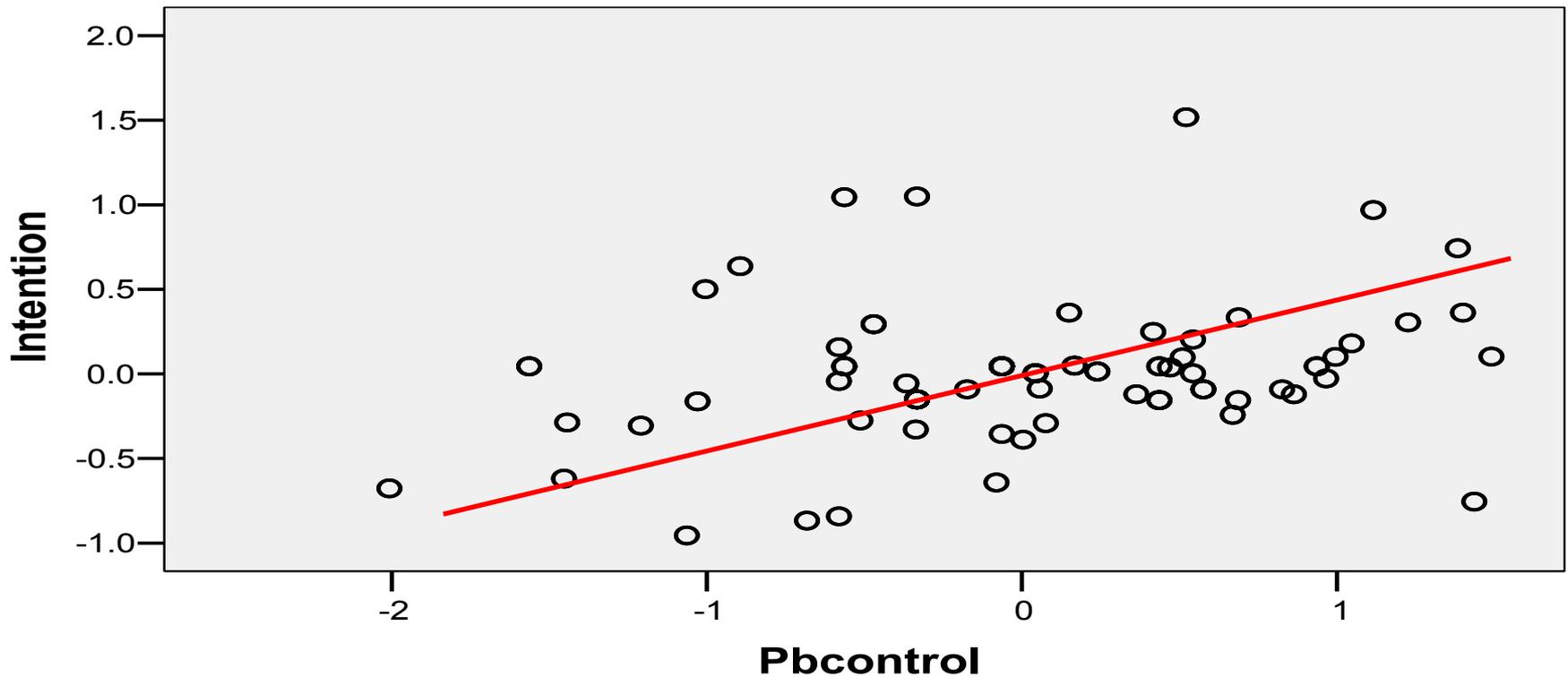
Dependent Variable: Intention



# Assumptions (Linearity)

## Partial Regression Plot

Dependent Variable: Intention



# Table Presentation

Hypothesis	Construct	Unstd. Beta	Std Beta	Std. Error	<i>t</i> -value	<i>p</i> -value
H1	Attitude	0.758	0.784	0.050	15.271	0.000
H2	Subjective Norm	0.085	0.091	0.047	1.801	0.073
H3	Perceived Behavioral Control	0.145	0.173	0.029	5.015	0.000

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# Chapter 5 - Discussion

# Chapter 5 - Project

1. Recapitulation
2. Discussion
3. Implications
  - a) Theoretical Implications
  - b) Policy Implications
4. Limitations
5. Suggestion for Future Research
6. Conclusion

# Recap

- This study aims to understand why the intention to continue using Instagram is still low among students. There is need to understand how to increase continuous use as that will affect the profit of firms. In order to substantiate the research problem, 7 variables – sociability, status, entertainment, status, attitude, subjective norm, perceived behavioral control and satisfaction were chosen and incorporated as determinants of perceived ease of use integrating the Theory of Planned Behavior Reasoned Action (TPB) by Ajzen (1991) and Uses and Gratifications Theory by Anderson and Meyer (1975).
- The findings of the study will eventually answer the following questions:-
  - (1) What are the key determinants of attitude towards continuous use?
  - (2) What are the effects of attitude, subjective norm and perceived behavioral control on continuous usage intention?

# Discussion

1. What did you hope to find?
2. What did you find?
3. Was the findings similar to the literature or contradicts the literature?
4. Why is the relationship significant or not significant? (reasons)



# Discussion

Sociability

Attitude  
towards  
Instagram

- We posited a positive relationship between sociability and attitude towards continuous use.
- The findings showed that there was a strong positive relationship supporting H1 of our study.
- This result broadens previous findings (Chiang, 2013) positing that socialization influences the attitudes of innovators/early adopters.
- Quan-Haase and Young (2010) found social interaction predict general friend social network use. This result shows that users see friend networks as a diversion from other tasks and a way to have fun.
- The importance of social motivation indicates friend social network are seen as important tools for feeling involved with family and friends' lives and keeping up to date with their activities.

# Discussion

Status

**Attitude  
towards  
Instagram**

- We hypothesized a positive relationship between status and attitude towards continuous use.
- However, contrary to expectations, the desire to follow fashion or reach a desired social status is not a determining motivation for participating in friend social networks (H2 not supported).
- This result can be explained, first, by the fact that the generalized use of friend social networks means that they are not perceived as an instrument for generating social status.
- Second, the composition of the sample, where 89 per cent of the individuals are over the age of 18 may also explain this result. For teenagers, the peer network is an important source of information about new trends and peer pressure, social connectivity and curiosity are the main motivations but this motivation is less important for older people because their personalities are clearly defined.

# Implications - Theory

- Of the three variables in the TPB model analysed in this study, friend social network attitude and the subjective norm do affect social network behaviour intention.
- Thus, network loyalty can be achieved if the individual shows a favourable attitude towards use and receives positive feed-back (comments, opinions, etc.) from friends, acquaintances and other individuals in their environment. The service is evaluated, therefore, on the basis of the individual's relations with other people.

# Implications - Policy

- Given the importance of social relations, companies should include **participation elements** in their web sites **such as: frequently asked questions, blogs, virtual communities (spaces where a specific topic is discussed in connection with what the web site offers) or discussion forums (general and specific)**, so that by monitoring them, the company can gather information on the people who participate and thus improve its products or services and even the web site itself.
- It is also important for users to be able to recommend the web site to friends and acquaintances from the web site itself as third party opinions can favor user loyalty. Companies should also **include links on their web sites to enable direct access to friend social networks**. Companies **must inform of the existence of these participation spaces, how individuals can participate and the benefits of use**. This aspect will undoubtedly help to improve individual attitude towards friend social network use.

# Implications - Policy

- Attitude can be improved by attractive design and contents. **Designing an entertaining, fun web site/network is another recommendation that will help to improve attitude.** A sensation of flow must be generated in the individual so that the user loses the notion of time when navigating on the web site/network. **This flow sensation can be achieved by including audiovisual elements which capture the person's attention, such as videos, participation in votes, games or competitions, the ability to personalise content, etc.**

# Limitations

- A limitation of this study is that it uses a single data collection source, so the empirical study probably suffers from common method bias (Podsakoff et al., 2003).
- Our sample size was small only 125 respondents due to time limitations.
- The use of a convenience sampling may also limit the generalizability of our study.

# Future Research

- The use of single source data bias could be controlled for in the future with a multi-method study, for example by combining measurement instruments based on surveys with observational methods for friend social network use behavior.
- Future studies also may want to enlarge the sample size and use a different sampling technique like quota sampling to select a more representative sample of respondents from the Arts and Science fields of study.
- Future line of research could analyze the moderator effect of experience on the proposed model, as the results may vary.
- Consequently, another future line of research could apply the model to a sample of mobile social network users in order to compare results.

# Conclusion

- This present study highlights the importance of attitude in the context of friend social networks and identifies the main factors influencing friend social network loyalty (use and WOM communication intention).
- The study makes two specific contributions to the literature. First, it presents a model that explains the formation of loyal friend social network customers. Second, it integrates TPB variables with variables from the Uses and Gratifications Theory to enable understanding of the role of these networks in individuals' lives.

Life is like Sea.  
As vast as you can imagine; As deep as you can think.  
Don't waste time measuring your life. You won't succeed.

Instead, explore Life.  
Reach for new harbours as you pass through different phases of life.  
Make friends on each destination. Enjoy your journey.

  
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