LESSON 7:

LIKERT'S SCALE

PREPARED BY: VLADEMIR PAGTAKHAN

TOPICS

- Likert's Scale
- Terminologies and Formulas to interpret Likert's Scale

LIKERT'S SCALE

- Developed by Rensis Likert (1932)
- It is a psychometric scale that is commonly used in research accompanied by a questionnaire
- Commonly used scale is the Neutral Scale:
  - Five point Scale
  - Seven point Scale

LIKERT'S SCALE

- Terminologies
  - Weighted Mean (μ) – mean per question that can be interpreted
  - Weighted Mean 2 ($\mu 2$) – used just to get standard deviation
  - Overall Mean ($\sum \mu$) – summation mean of the whole study
  - Standard Deviation (σ) – standard deviation per question
  - Overall Standary Deviation ($\sum \sigma$) – summation standard deviation of the whole study
  - Frequency (f) – number of respondents / number of responses
  - Questions (n)

LIKERT'S SCALE

- Terminologies
  - Rating – the choices for the respondents to answer each questions.

    1 – Strongly Disagree
    2 – Disagree
    3 – Either Agree or Disagree
    4 – Agree
    5 – Strongly Agree
  - Range – used to interpret the mean or the whole study as conclusion.

    0 to 1.49 – Strongly Disagree
    1.50 to 2.49 – Disagree
    2.50 to 3.49 – Either Agree or Disagree
    3.50 to 4.49 – Agree
    4.50 to 5 – Strongly Agree

LIKERT'S SCALE

- Formulas
  - Weighted Mean (μ) – $\mu = \frac{\sum(f * ratings)}{\sum f}$
  - Weighted Mean 2 ($\mu 2$) – $\mu 2 = \frac{\sum(f * (ratings^2))}{\sum f}$
  - Overall Mean ($\sum\mu$) – $\sum\mu = \frac{\sum\mu}{n}$
  - Standard Deviation (σ) – $\sigma = \mu 2 - \mu$
  - Overall Standary Deviation ($\sum\sigma$) – $\sum\sigma = \sqrt{\frac{\sum(\mu - \Sigma\mu)^2}{n-1}}$

LIKERT'S SCALE

Q#	5	4	3	2	1	TOTAL
1	50	25	15	8	2	100
2	45	27	13	15	0	100
3	41	35	12	7	5	100
4	100	0	0	0	0	100
5	97	1	1	0	1	100

μ	$\mu 2$	σ	Interpretation

TOTAL RESPONDENTS : 100

LIKERT'S SCALE

Weighted Mean for Q1

$$\mu = \frac{\sum((50*5)+(25*4)+(15*3)+(8*2)+(2*1))}{100} \quad \mu = \frac{423}{100} \quad \mu = 4.23$$

Weighted Mean for Q2

$$\mu = \frac{\sum((45*5)+(27*4)+(13*3)+(15*2)+(0*1))}{100} \quad \mu = \frac{412}{100} \quad \mu = 4.12$$

Weighted Mean for Q3

$$\mu = \frac{\sum((41*5)+(35*4)+(12*3)+(7*2)+(5*1))}{100} \quad \mu = \frac{400}{100} \quad \mu = 4.00$$

Weighted Mean for Q5

$$\mu = \frac{\sum((97*5)+(1*4)+(1*3)+(0*2)+(1*1))}{100} \quad \mu = \frac{493}{100} \quad \mu = 4.93$$

μ	$\mu 2$	σ	Interpretation
4.23			
4.12			
4.00			
5.00			
4.93			

LIKERT'S SCALE

Weighted Mean2 for Q1

$$\mu = \frac{\sum((50*25)+(25*16)+(15*9)+(8*4)+(2*1))}{100} \quad \mu = \frac{1819}{100} \quad \mu = 18.19$$

Weighted Mean2 for Q2

$$\mu = \frac{\sum((45*25)+(27*16)+(13*9)+(15*4)+(0*1))}{100} \mu = \frac{1734}{100} \quad \mu = 17.34$$

Weighted Mean2 for Q3

$$\mu = \frac{\sum((41*25)+(35*16)+(12*9)+(7*4)+(5*1))}{100} \quad \mu = \frac{1726}{100} \quad \mu = 17.26$$

Weighted Mean2 for Q5

$$\mu = \frac{\sum((97*25)+(1*16)+(1*9)+(0*4)+(1*1))}{100} \quad \mu = \frac{2451}{100} \quad \mu = 24.51$$

μ	$\mu 2$	σ	Interpretation
4.23	18.19		
4.12	17.34		
4.00	17.26		
5.00	25.00		
4.93	24.51		

LIKERT'S SCALE

Standard Deviation for Q1

$\sigma = 18.19 - 4.23$ $\sigma = 13.96$

Standard Deviation for Q2

$\sigma = 17.34 - 4.12$ $\sigma = 13.22$

Standard Deviation for Q3

$\sigma = 17.26 - 4.00$ $\sigma = 13.26$

Standard Deviation for Q4

$\sigma = 25.00 - 5.00$ $\sigma = 20.00$

Standard Deviation for Q5

$\sigma = 24.51 - 4.93$ $\sigma = 19.58$

μ	$\mu 2$	σ	Interpretation
4.23	18.19	13.96	Agree
4.12	17.34	13.22	Agree
4.00	17.26	13.26	Agree
5.00	25.00	20.00	Strongly Agree
4.93	24.51	19.58	Strongly Agree

0 to 1.49 – Strongly Disagree
1.50 to 2.49 – Disagree
2.50 to 3.49 – Either Agree or Disagree
3.50 to 4.49 – Agree
4.50 to 5 – Strongly Agree

LIKERT'S SCALE

Overall Mean

$$\sum\mu = \frac{\sum(4.23+4.12+4.00+5.00+4.93)}{5}$$

$$\sum\mu = \frac{22.28)}{5}$$

$$\sum\mu = 4.46$$

Strongly Agree

μ	μ2	σ	Interpretation
4.23	18.19	13.96	Agree
4.12	17.34	13.22	Agree
4.00	17.26	13.26	Agree
5.00	25.00	20.00	Strongly Agree
4.93	24.51	19.58	Strongly Agree

Overall Standard Deviation

$$\sum\sigma = \sqrt{\frac{\sum\left((4.24-4.46)+(4.12-4.46)+(4.00-4.46)+(5.00-4.46)+(4.93-4.46)\right)^2}{5-1}}$$

$$\sum\sigma = \sqrt{\frac{\sum(-0.22)+(-0.34)+(-0.46)+(0.54)+(0.47))^2}{4}}$$

$$\sum\sigma = \sqrt{\frac{-0.01^2}{4}}$$

$$\sum\sigma = \sqrt{\frac{0.0001}{4}}$$

$$\sum\sigma = \sqrt{0.000025}$$

$$\sum\sigma = 0.005$$

END

Thank you and God bless!