

IMPROVING BANK CALL CENTER OPERATIONS | Exercise 2(A) | Measurement System Analysis(MSA)

Exercise 2:

A. What kind of data is shown in Table 2?

Which method would you use for measurement system analysis (MSA) to verify the repeatability and reproducibility of QA results? Conduct the appropriate MSA.

Table 2					
Voice Sample	Master Appraiser	John Trial 1	John Trial 2	Miranda Trial 1	Miranda Trial 2
1	3	3	2	3	3
2	2	2	2	2	2
3	2	2	2	2	2
4	4	4	3	4	4
5	2	1	1	1	1
6	5	5	4	5	5
7	4	4	4	5	4
8	3	3	2	3	3
9	3	3	3	3	3
10	4	4	5	4	4
11	2	2	1	2	2
12	3	3	3	3	3
13	5	5	4	5	5
14	2	2	2	2	2
15	2	2	2	2	2
16	2	2	2	2	2
17	2	2	2	2	2
18	4	4	3	4	3
19	3	3	3	3	3
20	2	2	2	2	2

What kind of data is shown in Table 2?

*The data provided above is **continuous data**. Continuous data is a type of data that can take on any value within a given range. In this case, the data is the measurements of the voice samples, which can take on any value within a given range.

Some examples of continuous data: Temperature, Weight, Height, Time, Distance, Volume, Speed.

***Attribute data, on the other hand, is a type of data that can only take on a limited number of values. For example, the data could be the gender of the appraisers, which can only take on two values: male or female.**

More examples include True or False, Pass or Fail, colors etc.

Q>Which method would you use for measurement system analysis (MSA) to verify the repeatability and reproducibility of QA results?

*** The most appropriate method for MSA to verify the repeatability and reproducibility of QA results in this case is the ANOVA method.**

In the case of the data provided, we only have one appraiser, so we would use a one-way ANOVA to conduct the MSA. A one-way ANOVA is appropriate when you have one independent variable with multiple levels (groups) and you want to compare the means of the dependent variable across those groups. In this scenario, the independent variable (appraiser) has only one level, while the dependent variable is the voice sample.

Therefore, a one-way ANOVA is suitable to compare the voice samples of one appraiser and two operators. It will assess whether there are statistically significant differences in the voice samples among the three groups (appraiser and two operators).

Anova: Single Factor

SUMMARY

Groups	Count	Sum	Average	Variance
Master Appraiser	20	59	2.95	1.102632
John Trial 1	20	58	2.9	1.252632
John Trial 2	20	52	2.6	1.094737
Miranda Trial 1	20	59	2.95	1.418421
Miranda Trial 2	20	57	2.85	1.186842

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1.7	4	0.425	0.350934	0.842796	2.467494
Within Groups	115.05	95	1.211053			
Total	116.75	99				

***Null Hypothesis: Means are the same.**

***Alternate Hypothesis: Means are different.**

***The P value (0.842) is greater than the significance level (0.05), so we "Cannot Reject the Null Hypothesis (Accept the Null Hypothesis)" that the means are equivalent.**

***There is no significant variation between measurements made by the appraiser. Therefore, the measurement system is considered to be repeatable and reproducible.**