

Quantative reasoning



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Quantitative Maths The two measures of central tendency chosen to choose the group for the company are: a) Mean: The mean is calculated by adding all the values of the groups and then dividing it by the total number count of the values. The mean calculated has been calculated for both the groups of employees and is calculated to be 79.1.

Using this as a measure it would be difficult to decide which a better option is since both the groups have equal mean.

b) Median: This is the second measure that has been used here to check for the central tendency. The median is simply the centre of all the values, this implies that half of the values fall above the median while the other half fall below the median.

In the case of Group A, the median has been calculated to be 79.5, which shows that the median for this group is 79.5. This implies that half of the people of this group have a manual dexterity of over 79.5 and the other half of the employees have a manual dexterity of over 79.5.

In the case of Group B, the median has been calculated to be 89. Here again this implies that half of the employees have a manual dexterity of over 89 and the other half above 89.

Using this as a measure Group B is considered to be better than Group A, as this simply implies that the employees are less likely to break the fragile items.

Group A

Group B

77

100

87

99

80

62

91

57

77

95

84

96

90

69

60

32

79

83

66

98

Total

791

791

Mean

79. 1

79. 1

Median

79. 5

89

Measure of Dispersion: The measure of dispersion chosen for this problem is Standard deviation. This provides for the possible dispersion for each of the groups.

Group A = 9.44

Group B = 22.01

Group A:

To calculate the standard deviation of Group A, firstly the difference of the values and the mean is calculated, after which these numbers are squared. The total of the squares are then calculated and then divided by the number of values to provide the Variance. The last step is to take the square root of the variance. This provides the standard deviation for the group.

Below are the calculations for Group A:

X

X-Avg.

(X-Avg.)²

77

-2.1

4.41

87

7.9

62.41

80

0.9

0.81

91

11.9

141. 61

77

-2. 1

4. 41

84

4. 9

24. 01

90

10. 9

118. 81

60

-19. 1

364. 81

79

-0. 1

0. 01

66

-13. 1

171. 61

892. 9

Variance

89. 29

Standard Deviation

9. 44

Group B:

X

X-Avg.

(X-Avg.)²

100

20. 9

436. 81

99

19. 9

396. 01

62

-17. 1

292. 41

57

-22. 1

488. 41

95

15. 9

252. 81

96

16. 9

285. 61

69

-10. 1

102. 01

32

-47. 1

2218. 41

83

3. 9

15. 21

98

18. 9

357. 21

4844. 9

The solutions got from the Central tendency measures and the solutions of the standard Deviation do not allow giving a clear picture for which group is a better choice since:

The Standard deviation along with the Mean, give the image of Group A to be a better option, whereas combining the Standard deviation and the median, Group B proves to be a better option. Thus these measures alone cannot be considered to make the choice. Other measures are to be kept in mind as well before making a decision by the company. Thus more data and analysis is required for this decision.

2. From the information that has been provided the Mean has been calculated to be 7. 55 calls. For the mode however there are two possible answers, 4 as well as 8. This is because they are repeated the most number of times. However, 8 will be chosen as the Mode in this case as it is closer to the mean that has been calculated. The Median for in this case has been calculated to be 7. These numbers are quite accurate and are as expected. These values are all quite accurate, however the median can be considered as the most accurate measure.

The Standard Deviation in this case has been calculated as 4. 421255. This implies that the number of calls can be 4. 421255 above or below the

calculated mean. This deviation is considered to be good as the deviation is not very high and allows a clearer view of the number of calls the company can expect.

Day

No. of Calls

X-Avg.

$(X - \text{Avg.})^2$

1

4

-3.55

12.6025

2

20

12.45

155.0025

3

6

-1.55

2.4025

4

8

0.45

0.2025

5

9

1.45

2. 1025

6

15

7. 45

55. 5025

7

11

3. 45

11. 9025

8

1

-6. 55

42. 9025

9

9

1. 45

2. 1025

10

4

-3. 55

12. 6025

11

8

0. 45

0. 2025

12

7

-0.55

0.3025

13

7

-0.55

0.3025

14

3

-4.55

20.7025

15

4

-3.55

12.6025

16

3

-4.55

20.7025

17

6

-1.55

2.4025

18

5

-2.55

6. 5025

19

8

0. 45

0. 2025

20

13

5. 45

29. 7025

Mean = 7. 55

390. 95

Total

19. 5475

Variance

4. 421255

Standard Deviation