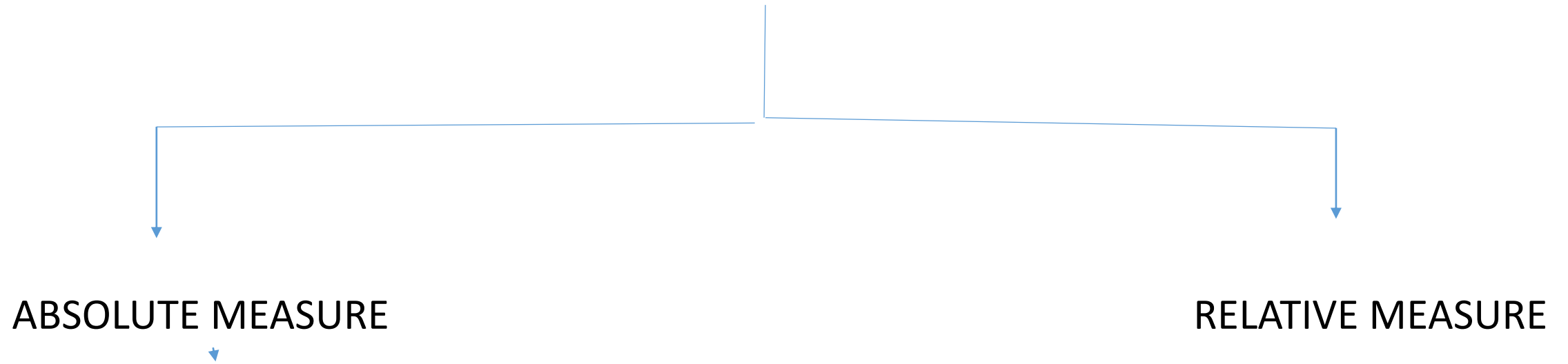# MEASURES OF DISPERSION

- Indicates how many items are deviating from the central value
- Large value of this measure indicates larger variability and lessor consistency
- 7 properties of central value

MEASURES OF DISPERSION

ABSOLUTE MEASURE

RELATIVE MEASURE

ABSOLUTE MEASURE

- RANGE
- QUARTILE DEVIATION
- MEAN DEVIATION
- STANDARD DEVIATION

RELATIVE MEASURE

- CO-EFFICIENT OF RANGE
- CO-EFFICIENT OF QUARTILE DEVIATION
- CO-EFFICIENT OF OF MEAN DEVIATION
- CO-EFFICIENT OF STANDARD DEVIATION

RANGE

- ONLY USED FOR CRUDE ANALYSIS

- RANGE = HIGHEST VALUE – LOWEST VALUE

- CO-EFFICIENT OF RANGE = HIGHEST VALUE – LOWEST VALUE

HIGHEST VALUE + LOWEST VALUE

QUARTILE DEVIATION

- Better measure than range

- Inter quartile range = Q3-Q1

- QD = (Q3-Q1) /2

- CO-EFFICIENT OF QD = (Q3-Q1)/(Q3+Q1)

MEAN DEVIATION (M.D.)

- It is also called Average Deviation
- Used for management forecasting as forecasting tool.

- M.D. from Median $= \dfrac{\Sigma|X-M|}{N}$ or $\dfrac{\Sigma|d_M|}{N}$

- M.D. from Mean $= \dfrac{\Sigma|X-X|}{N}$ or $\dfrac{\Sigma|d_x|}{N}$

- Coefficient of M.D.$_M = \dfrac{M.D._M}{Median}$

- Coefficient of M.D.$_X = \dfrac{M.D._x}{Mean}$

STANDARD DEVIATION

- Karl Pearson
- Widely used and significant
- Root mean square deviation

$$S = \sqrt{\frac{\Sigma(X - \overline{X})^2}{N}}$$

where S = the standard deviation of a sample,
Σ means "sum of,"
X = each value in the data set,
$\overline{X}$ = mean of all values in the data set,
N = number of values in the data set.