# STATISTICAL ANALYSIS

M.Com 2nd semester

# ASSOCIATION OF ATTRIBUTES

**PRESENTED BY.**
**DR VANDNA PANDEY**
**ASSOCIATE PROFESSOR**
**DEPARTMENT OF COMMERCE**
**HCPGC VARANASI**

# Contents

- Meaning
- Types of Association of Attributes
- Technique of Association of Attributes

  (comparison of observed and expected frequencies)
- Different combinations of two attributes A and B and technique of interpretation
- Measurement of association on the basis of frequencies of ultimate classes
- Explanation by example

# Meaning

Statistically two attributes A and B are said to be associated only if they appear together in a greater number of cases than is to expected but the condition is they should be independent.

Means Association of Attributes is to find out the relationship between the attributes of any two or more variables.

# Types of Association of Attributes

- **Positive Association**:-For positive association both attributes should be affected in the same direction ,i.e. increase in second attribute on increase in first or decrease in second attribute on decrease in first.

  **Eg. Literacy and employment or illiteracy and criminality**

- **Negative Association:-**For negative association both attributes should be affected in different directions , i.e. presence of an attribute causes absence of the other attribute.

  **Eg. Vaccination and attack of a disease**

- **Independence of Attributes:-** When two attributes do not have tendency to be present together or presence of one does not cause absence of the other attribute , they are regarded as independent.

# Technique of Association of Attributes (comparison of observed and expected frequencies)

The association between two attributes A and B is interpreted as follows:-

1. If the number of actual observations of AB is more than the expected number(A*B/N), then there is positive association between them.
2. If the number of actual observations of AB is less than the expected number, then there is negative association between them.
3. If the number of actual observations of AB is just equal to that of expected , then both the attributes are independent.

# Different combinations of two attributes A and B and technique of interpretation

| Attributes | Independent | Positive association | Negative association |
|---|---|---|---|
| A and B | (AB)=(A)*(B)/N | (AB)>(A)*(B)/N | (AB)<(A)*(B)/N |
| A and b | (Ab)=(A)*(b)/N | (Ab)>(A)*(b)/N | (Ab)<(A)*(b)/N |
| a and B | (aB)=(a)*(B)/N | (aB)>(a)*(B)/N | (aB)<(a)*(B)/N |
| a and b | (ab)=(a)*(b)/N | (ab)>(a)*(b)/N | (ab)<(a)*(b)/N |

# Measurement of association on the basis of frequencies of ultimate classes

If all ultimate class frequencies are given, association can be found out by the following formula

1.(AB)(ab)= (Ab)(aB) No association

2. (AB)(ab)> (Ab)(aB) Positive association

3. .(AB)(ab)< (Ab)(aB) Negative association

**Note:-**If class frequency of (AB) or (ab) is zero, it means that two attributes are completely negatively associated.

# Explanation by example

**Question:-** From the following information explain the nature of association between A and B, a and b, A and b, a and B.

(A)=100 (B)=80 (ab)=80 (AB)=60

**Solution:-** firstly we make nine square table

| | A | a | Total |
|---|---|---|---|
| B | **60** | 20 | **80** |
| b | 40 | **80** | 120 |
| Total | **100** | 100 | 200 |

| Class | Actual frequency | Expected frequency |
|---|---|---|
| (AB) | 60 | (A)*(B)/N=100*80/200=40 |
| (Ab) | 40 | (A)*(b)/N=100*120/200=60 |
| (aB) | 20 | (a)*(B)/N=100*80/200=40 |
| (ab) | 80 | (a)*(b)/N=100*120/200=60 |

**Conclusion:- Nature of association**

**AB(60)>(A)*(B)/N(40)=positive association**

**Ab(40)<(A)*(b)/N(60)=negative association**

**aB(20)<(a)*(B)/N(40)=negative association**

**ab(80)>(a)*(b)/N(60)=positive association**

Thank you