DA Assignment

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2019120063

2)

Attribute	Ontime	Late	Very Late	Cancelled
Weekday	0.64	0.5	0.67	0
Saturday	0.14	0.5	0.33	1
Sunday	0.07	0	0	0
Holiday	0.14	0	0	0
Winter	0.14	1	0.67	0
Autumn	0.14	0	0.33	0
Summer	0.43	0	0	0
Spring	0.29	0	0	0
Normal	0.36	0.5	0.67	0
High	0.29	0.5	0.33	1
None	0.36	0	0	0
None	0.36	0.5	0.33	0
Slight	0.07	0	0	0
Heavy	0.07	0.5	0.67	1
Prior Probab	0.70	0.1	0.15	0.05

Case 1

Class : Ontime

$= 0.7 \times 0.64 \times 0.14 \times 0.29 \times 0.36$

$= 6.547 \times 10^{-3}$

Case 2:

Class : Late

$= 0.1 \times 0.5 \times 1 \times 0.5 \times 0.5$

$= 0.0125$

Case 3:

Class : Very late

$= 0.15 \times 1 \times 0.67 \times 0.37 \times 0.33$

$= 0.0109$

Case 4:

Class : Cancelled

$= 0.05 \times 0.0 \times 0.0 \times 1 \times 0$

$= 0$

Hence it will be categorized under class late since Case 2 is highest value

2)

x^2 test

degree of freedom $(2-1)(2-1) = 1$

In x^2 test

we know

$$\sum_{i=1}^{m} \sum_{j=1}^{n} \frac{(a_{ij} - e_{ij})^2}{e_{ij}}$$

$$x^2 = \frac{[250 - 90]^2}{90} + \frac{[50 - 210]^2}{210} + \frac{[200 - 240]^2}{360} + \frac{[1000 - 840]^2}{840}$$

$x^2 = 507.93$

required value is 2.706

507.93 is very greater 2.706

Null hypothesis of independence is rejected with a coinfidence level of 0.1