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PR 2

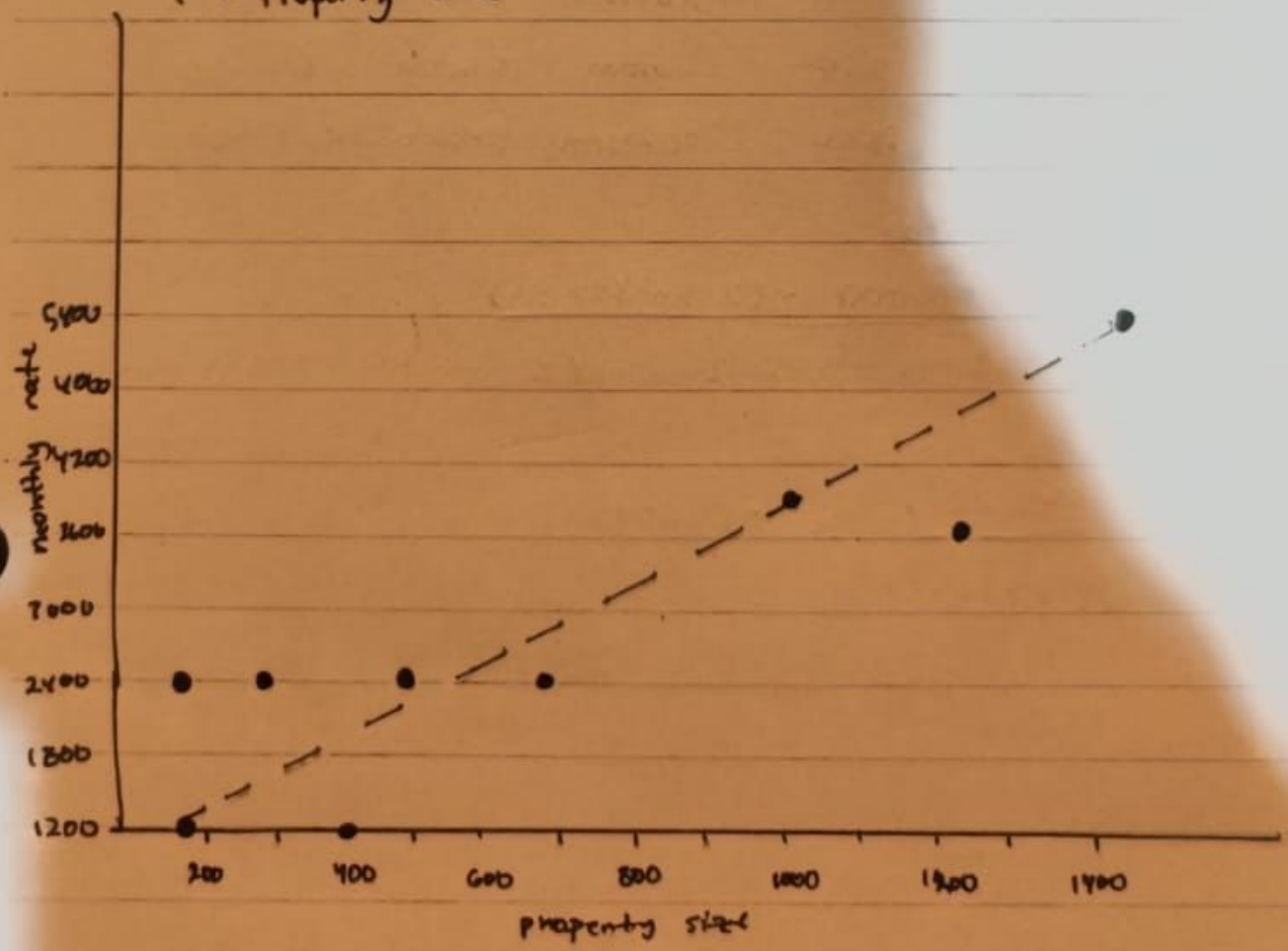
ALDEN LUTHFI - 2206028932

STATPROB E - 12

"Dengan ini Saya menyatakan bahwa PR ini adalah hasil pekerjaan Saya Sendiri"

① ⓐ X = monthly rent

Y = Property size



terdapat korelasi linear antara monthly rent dan property size

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(b)	monthly rent (X)	Property size (Y)	XY	X^2	Y^2
1	1200	400	480000	1440000	160000
2	3700	1200	4440000	13690000	1440000
3	2600	180	468000	6760000	32400
4	3900	1000	3900000	15210000	1000000
5	2600	500	1300000	6760000	250000
6	1200	180	216000	1440000	32400
7	5400	1400	7560000	29160000	1960000
8	2600	720	1872000	6760000	518400
9	2600	250	650000	6760000	62580
Σ	25800	5830	20886000	87980000	5455700

$$r_{xy} = \frac{9 \cdot 20886000 - (25800)(5830)}{\text{sqrt}(9 \cdot 87980000 - 665640000)(9 \cdot 5455700 - 33988900)}$$

$$= \frac{37560000}{43667867.27} = 0,8601$$

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(c)

	X rank	Y rank	d	d^2
1	1,5	4	-2,5	6,25
2	7	8	-1	1
3	4,5	1,5	3	9
4	8	7	1	1
5	4,5	5	-0,5	0,25
6	1,5	1,5	0	0
7	9	9	0	0
8	4,5	6	-1,5	2,25
9	4,5	3	1,5	2,25
Σ			0	22

$$\rho = 1 - \frac{6\sum d^2}{n(n^2-1)} = 1 - \frac{132}{720} = 0,8167$$

(d) pearson nilai = 0,8167 dan korelasi 0,8601 mengindikasikan korelasi positif yang kuat antara monthly rent dan property size

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(2.) (a.) $S = 13!$

urutan duduk = 2 (OAM , MAO)

urutan masing masing divisi = $6!4!3!$

$$P(A) = \frac{2.6!.4!.3!}{13!}$$

(b.) $S = (13-1)! = 12!$

urutan duduk = 2 (AOM , OAM)

urutan masing-masing divisi = $6!4!3!$

$$P(A) = \frac{2.6!.4!.3!}{12!}$$

(c.) $S = C_{10}^{13}$

cara memilih academy = 1

cara memilih 1 Ope = C_1^3

Cara memilih 1 marketing = C_1^4

Cara memilih 2 orang sisa = C_2^5

$$P(A) = \frac{C_1^4 C_1^3 C_2^5}{C_{10}^{13}} = \frac{4.3.5.2}{13.2.11} = \frac{60}{143}$$

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③ A : mahasiswa merasa bahagia

B : mahasiswa mengambil kecerdasan buatan

C : mahasiswa mengambil e-bisnis

(a) ① $P(A) = 0,4$ ... ①

② $P(B) = 0,6$ ... ②

③ $P(C) = 0,5$ ... ④

④ $P(A|B) = 0,3$ ... ②

⑤ $P(A|C) = P(AC)/P(C) = 0,4$ ... ④

⑥ $P(B^cC^c) = 0,1$ ... ⑤

⑦ $P(AB) = P(B)\,P(A|B) = 0,18$

⑧ $P(AC) = 0,2$ ... ④

⑨ $P(A \cup B) = P(A) + P(B) - P(AB) = 0,82$

⑩ $P(A^cB^cC^c) = 1/100 = 0,01$

⑪ $P(BC) = 0,2$

(b) $P(B|A^c) = P(BA^c) / P(A^c)$

$P(BA^c) + P(BA) = P(B)$

$P(BA^c) + 0,18 = 0,6$

$P(BA^c) = 0,42$

$P(A^c) = 1 - 0,4 = 0,6$

$\therefore P(B|A^c) = 0,42 / 0,6 = 0,7$

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(c) $P(A \mid BC) = P(ABC) / P(BC)$

$P(ABC) = P((A^cB^cC^c)^c) - P(A) - P(B) - P(C) + P(AB) + P(BC) + P(AC)$

$= 0,99 + 0,58 - 1,5$

$= 0,07$

$\therefore P(A \mid BC) = 0,07 / 0,2 = 0,35$

(d) $P(B^cC \mid A^c) = P(A^cB^cC) / P(A^c)$

$P(A^cB^c) = P(A^cB^cC) + P(A^cB^cC^c)$

$1 - P(A \cup B) = P(A^cB^cC) + 0,01$

$0,18 - 0,01 = P(A^cB^cC)$

$= 0,17$

$\therefore P(B^cC \mid A) = 0,17 / 0,6 = 0,283$

(4) A : Suara dianggap sah oleh sistem

B : Suara Sah

(a) $P(B^c) = 0,02$, $P(B) = 0,98$

$P(A \mid B) = 0,6$, $P(A^c \mid B) = 0,4$

$P(A \mid B^c) = 0,03$, $P(A^c \mid B^c) = 0,97$

(b) $P(AB) = P(A \mid B) P(B) = 0,6 \cdot 0,98 = 0,588$

$P(AB^c) = P(A \mid B^c) P(B^c) = 0,03 \cdot 0,02 = 0,0006$

$P(A) = P(AB) + P(AB^c) = 0,5886$

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ⓒ $P(B|A) = \frac{P(AB)}{P(A)} = \frac{0,5880}{0,5886} = 0,999$

ⓓ K : diperiksa petugas 1
L : diperiksa petugas 2

K dan L independen

$P(KL) = P(K)P(L) = P(A)P(A)$
$= (0,5886)^2 = 0,346$