IJTIMOIY JARAYONLARNI IFODALOVCHI STATISTIK MA'LUMOTLAR ASOSIDA KONSERT DASTURI MOBAYNIDA YO'L QO'YILISHI MUMKIN BO'LGAN XATOLAR SONINI OLDINDAN BASHORAT QILUVCHI MODEL YARATISH

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Annotatsiya: ushbu maqolada konsert dasturida sodir etilishi mumkin bo'lgan xatolar sonini bashorat qiluvchi model tuzilgan. Konsert oldi mashq soatlari va shu mashqlar vaqtida sodir etilgan xatolar soni o'rtasidagi bog'liqlik statistik tahlil qilingan. Bir nechta modellar qurilib, har biri uchun korelogramma va uning tahlili ko'rsatilgan, ular ichidan regression tahlil natijalari asosida eng yaxshi model taklif etilgan.

Kirish: statistika nazariyasi barcha tarmoq statistikasining metodologik asosi hisoblanadi. Iqtisodiy statistika makroiqtisodiy ko‘rsatkichlarni ishlab chiqadi va tahlil qiladi. Iqtisodiyot, ijtimoiy takror ishlab chiqarish tarmoqlari va elementlarining tuzilishi, nisbati, o‘zaro bog‘liqligi, ishlab chiqaruvchi kuchlarni taqsimlash, moddiy, mehnat va moliyaviy resurslarning tarkibi va ulardan foydalanish xususiyatlarini ko'rib chiqadi. O‘z sohalari bo‘yicha statistik ko‘rsatkichlarni ishlab chiqish barcha tarmoq statistik xodimlarining vazifasidir.

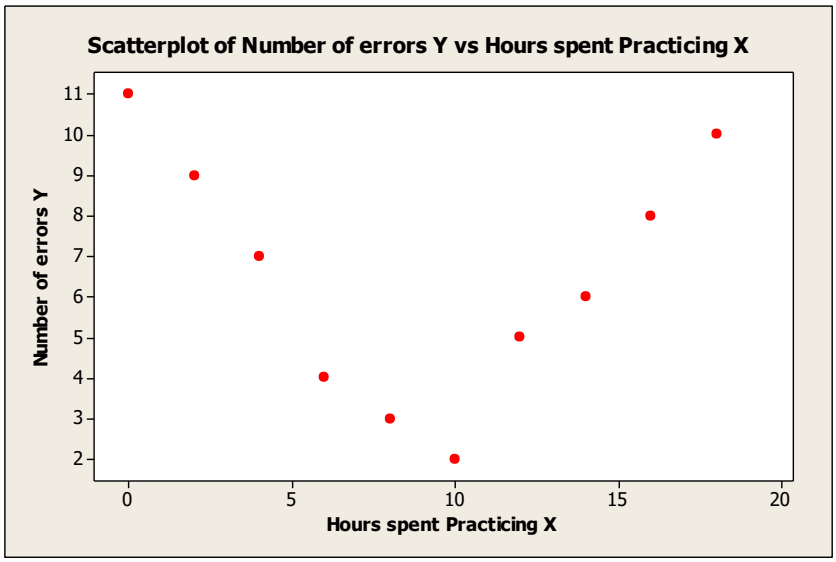
Maqola va asosiy qism: iqtisodiy-ijtimoiy jarayonlarni ifodalovchi statistik ma'lumotlar asosida matematik modellar qurish va ushbu modellar yordamida bashorat ko'rsatkichlarini olib tegishli xulosalar chiqarishni quyidagi masala misolida ko'rib chiqamiz.

1.Masalaning qo'yilishi:

Kontsert oldidan mashq qilingan soatlar soniga asoslanib, ikki soatlik konsert davomida ishtirokchilar tomonidan yo'l qo'yilgan xatolar sonini taxmin qilish uchun model ishlab chiqish kerak. Quyidagi ma'lumotlarni to'plandi:

X	Y
0	11
2	9
4	7
6	4
8	3
10	2
12	5
14	6
16	8
18	10

2. Korelogramma va uning tahlili:



Correlations: Hours spent Practicing X; Number of errors Y

Pearson correlation of Hours spent Practicing X and Number of errors Y = -0,115
P-Value = 0,751
Manfiy, chiziqsiz, kuchsiz, korrelatsion bog'lanish bor.

3. Chiziqli model:

Regression Analysis: Number of errors Y versus Hours spent Practicing X

The regression equation is
Number of errors Y = 7,02 - 0,058 Hours spent Practicing X

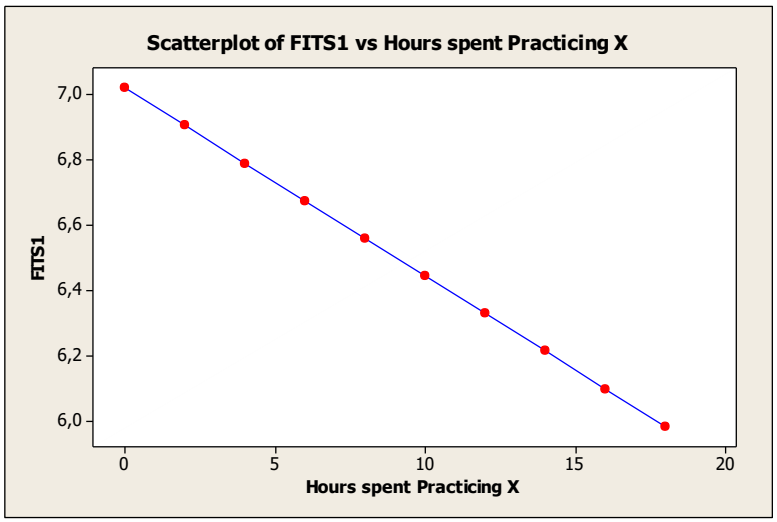
Predictor	Coef	SE Coef	T	P
Constant	7,018	1,875	3,74	0,006
Hours spent Practicing X	-0,0576	0,1756	-0,33	0,751

S = 3,18995 R-Sq = 1,3% R-Sq(adj) = 0,0%

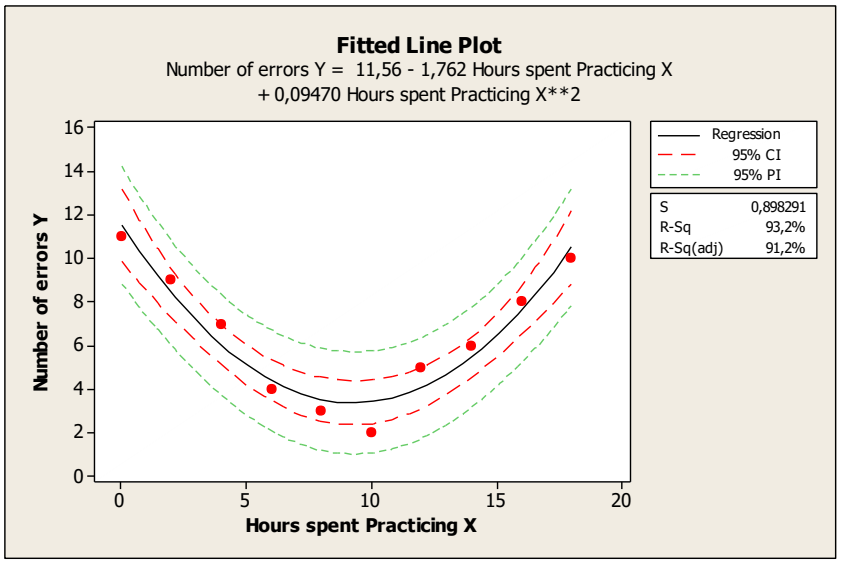
Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	1,09	1,09	0,11	0,751
Residual Error	8	81,41	10,18		
Total	9	82,50			

Chiziqli model bilan ishlab bo'lmaydi, chunki R-Sq = 1,3% R-Sq(adj) = 0,0%



4.Parabolik model:



The regression equation is
Number of errors Y = 11,56 - 1,762 Hours spent Practicing X
+ 0,09470 Hours spent Practicing X**2

S = 0,898291 R-Sq = 93,2% R-Sq(adj) = 91,2%

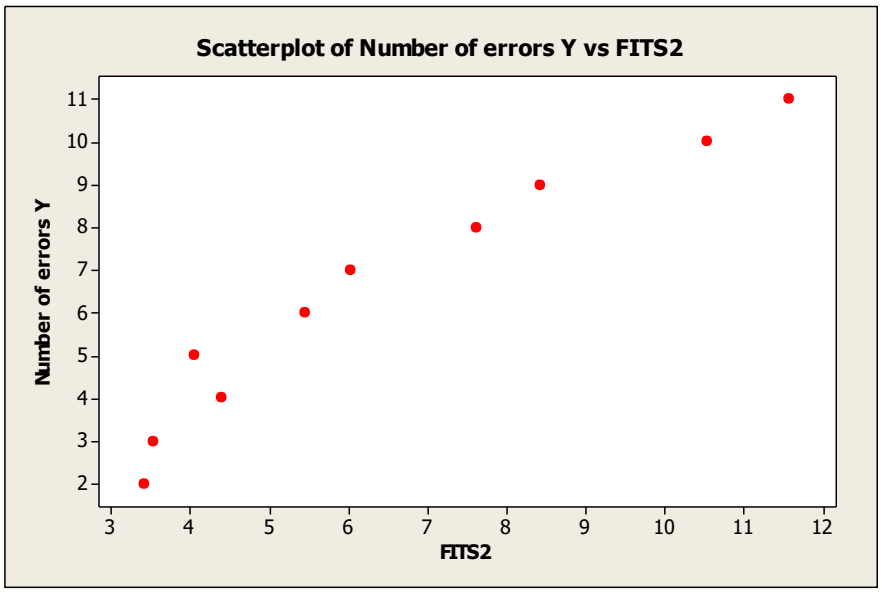
Analysis of Variance

Source	DF	SS	MS	F	P
Regression	2	76,8515	38,4258	47,62	0,000
Error	7	5,6485	0,8069		

Total 9 82,5000

Sequential Analysis of Variance

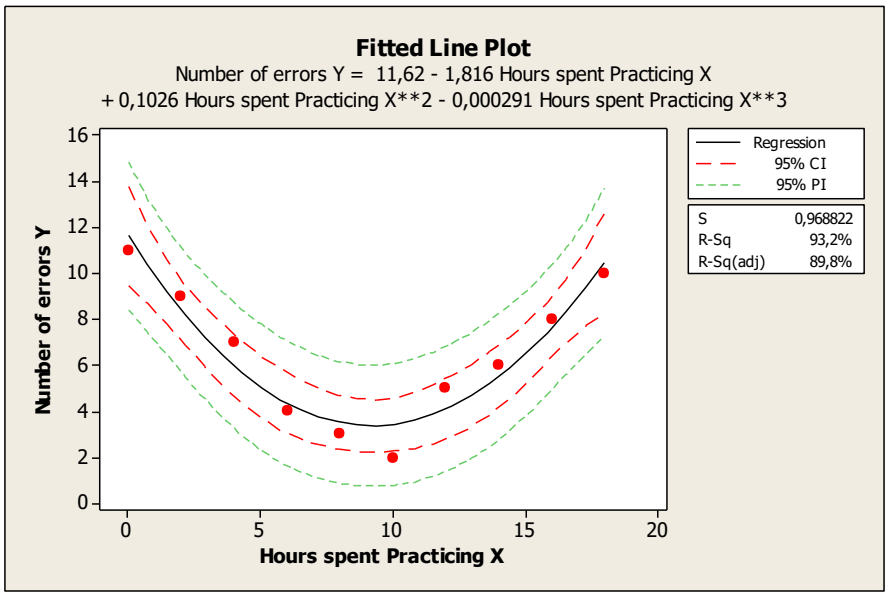
Source	DF	SS	F	P
Linear	1	1,0939	0,11	0,751
Quadratic	1	75,7576	93,88	0,000



Bu modelda determinatsiya koeffitsienti R-Sq = 93,2% R-Sq(adj) = 91,2%

Chiziqlidan ko'ra ancha yaxshi . Shuning uchun bu modeldan foydalansa bo'ladi.

5.Kubik model.



The regression equation is
Number of errors Y = 11,62 - 1,816 Hours spent Practicing X
+ 0,1026 Hours spent Practicing X**2
- 0,000291 Hours spent Practicing X**3

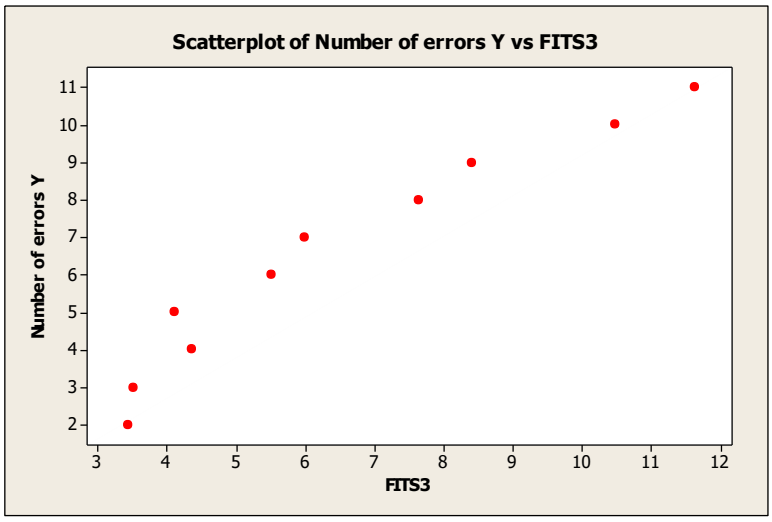
S = 0,968822 R-Sq = 93,2% R-Sq(adj) = 89,8%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	3	76,8683	25,6228	27,30	0,001
Error	6	5,6317	0,9386		
Total	9	82,5000			

Sequential Analysis of Variance

Source	DF	SS	F	P
Linear	1	1,0939	0,11	0,751
Quadratic	1	75,7576	93,88	0,000
Cubic	1	0,0168	0,02	0,898



R-Sq = 93,2% R-Sq(adj) = 89,8% bu modelda determinatsiya koeffitsienti o'zgarmadi, lekin tuzatilgan determinatsiya koeffitsienti kamaydi.

6. Polinomial model:

Regression Analysis: Number of er versus Hours spent ; X2; X3; X4

The regression equation is
Number of errors Y = 11,0 - 0,505 Hours spent Practicing X - 0,265 X2

+ 0,0325 X3 - 0,000911 X4

Predictor	Coef	SE Coef	T	P
Constant	10,9930	0,6326	17,38	0,000
Hours spent Practicing X	-0,5047	0,5487	-0,92	0,400
X2	-0,2653	0,1347	-1,97	0,106
X3	0,03249	0,01155	2,81	0,037
X4	-0,0009105	0,0003182	-2,86	0,035

S = 0,653483 R-Sq = 97,4% R-Sq(adj) = 95,3%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	4	80,365	20,091	47,05	0,000
Residual Error	5	2,135	0,427		
Total	9	82,500			

Source	DF	Seq SS
Hours spent Practicing X	1	1,094
X2	1	75,758
X3	1	0,017
X4	1	3,497

7.Giperbolik

Regression Analysis: Number of errors versus 1\Hours spent Pr

The regression equation is

Number of errors Y = 5,12 + 5,57 1\Hours spent Practicing X

9 cases used, 1 cases contain missing values

Predictor	Coef	SE Coef	T	P
Constant	5,125	1,437	3,57	0,009
1\Hours spent Practicing X	5,568	6,948	0,80	0,449

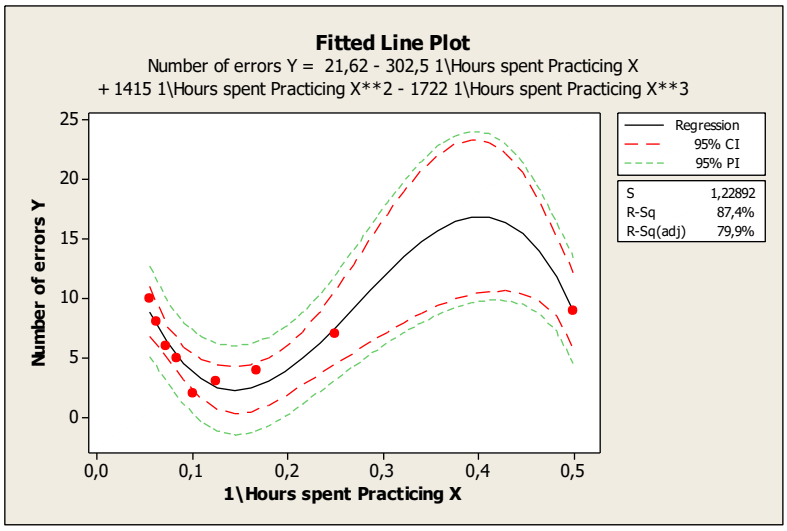
S = 2,80198 R-Sq = 8,4% R-Sq(adj) = 0,0%

Analysis of Variance

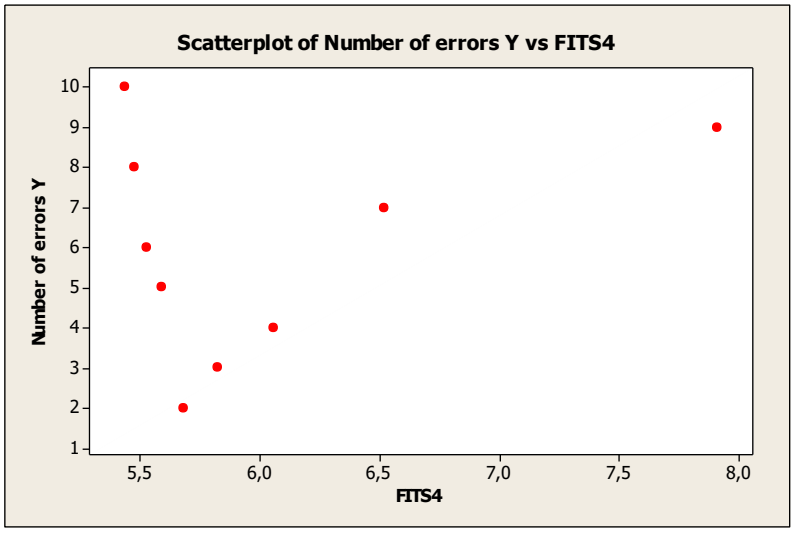
Source	DF	SS	MS	F	P
Regression	1	5,042	5,042	0,64	0,449
Residual Error	7	54,958	7,851		
Total	8	60,000			

Unusual Observations

Obs	1\Hours spent Practicing X	Number of errors Y	Fit	SE Fit	Residual	St Resid
2	0,500	9,000	7,909	2,559	1,091	0,96 X



Modelni murakkablashtirish yaxshi emas ekan, chunki R-Sq = 8,4% R-Sq(adj) = 0,0%



8. LOG-LINEAR MODEL

Regression Analysis: ln_Number of err versus ln_Hours spent P

The regression equation is
ln_Number of errors Y = 1,79 - 0,053 ln_Hours spent Practicing X

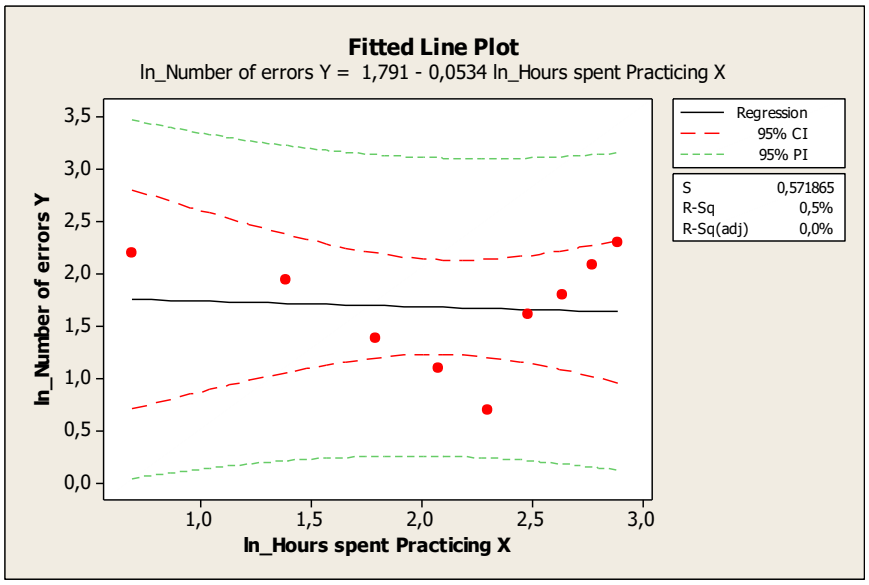
9 cases used, 1 cases contain missing values

Predictor	Coef	SE Coef	T	P
Constant	1,7911	0,6245	2,87	0,024
ln_Hours spent Practicing X	-0,0534	0,2811	-0,19	0,855

S = 0,571865 R-Sq = 0,5% R-Sq(adj) = 0,0%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	0,0118	0,0118	0,04	0,855
Residual Error	7	2,2892	0,3270		
Total	8	2,3010			



XULOSA:

Bu masala uchun eng yaxshi model polinomial model ekan, chunki bu modelda eng yaxshi determinatsiya koeffitsientiga ega bo'ldik.

Number of errors Y = 11,0 - 0,505
Hours spent Practicing X - 0,265 X2+ 0,0325 X3 - 0,000911 X4
R-Sq = 97,4% R-Sq(adj) = 95,3%

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