Lucía Serrano

Professor Bo

Quantitative methods of business

11/12/22

Module 5

1. Data into Excel

	A	B	C	D
1	Store	Sales	Price	Promotion
2	1	4141	59	200
3	2	3842	59	200
4	3	3056	59	200
5	4	3519	59	200
6	5	4226	59	400
7	6	4360	59	400
8	7	3507	59	400
9	8	3754	59	400
10	9	5000	59	600
11	10	5120	59	600
12	11	4011	59	600
13	12	5015	59	600
14	13	1916	79	200
15	14	675	79	200
16	15	3636	79	200
17	16	3224	79	200
18	17	2295	79	400
19	18	2730	79	400
20	19	2618	79	400
21	20	4421	79	400
22	21	4113	79	600
23	22	3746	79	600
24	23	3532	79	600
25	24	3825	79	600
26	25	1096	99	200
27	26	761	99	200
28	27	2088	99	200
29	28	820	99	200
30	29	2114	99	400
31	30	1882	99	400
32	31	2159	99	400
33	32	1602	99	400
34	33	3354	99	600
35	34	2927	99	600

2. Price and promotion are Independent Variables. Sales are a dependent variable.

3. Multiple regression output in Excel

SUMMARY OUTPUT

Regression statistics	
Multiple R	0,870609067
R square	0,757960148
Adjusted R square	0,742344673
Standard error	633,1112479
Observations	34

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	38911793,2	19455896,6	48,53904092	2,81998E-10
Residual	31	12425725,42	400829,8522		
Total	33	51337518,62			

	Coefficients	*standard error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	5783,460491	623,2731669	9,279174523	1,85441E-10	4512,286486	7054,634	4512,286	7054,634
Price	-52,63474702	6,799018831	-7,741520995	9,83497E-09	-66,50143735	-38,76806	-66,50144	-38,76806
Promotion	3,615066964	0,679901883	5,317042141	8,65201E-06	2,228397932	5,001736	2,228398	5,001736

4. The correlation between the variations in sales and their relationship with pricing and promotion is R-square = 0.7580. To answer the issue of whether this is a good thing, we can remark that typically, 25% of sales movements can be attributed to other variables that are not included in the model.

5. P is almost zero, at 2.81998E-10. As a result, we can infer that at least one of the independent variables is significant and that the overall model has predictive power.

6. Price and promotion both have substantial p-values that are close to zero. Both factors significantly impact sales.

7. **Predicted sales = -52.63x(Price) + 3.62(Promotion) + 5783.46**

8. Predicted sales = -52.63x(59) + 3.62(400) + 5783.46 = **4216.29**

9. Yes, we have a good r-sq value, and both of the independent variables' p-values are significant for the entire model.