Regression Analysis

Operating Unit	Sales (million units)	Advertising (£,000)	Price/unit (pence)
1	80	3	32
2	75.5	2.8	34
3	56.7	1.1	44
4	95.2	5.3	28
5	60.5	0.6	39
6	66.7	2.1	37
7	70.5	2.1	34
8	71.4	2.4	31
9	58.3	0.9	36
10	120.5	7.1	27
11	66.9	0.3	30
12	73.6	3.6	31
13	73.2	1.3	36
14	77.6	1.5	33
15	86.9	3.6	32
16	91.5	4.7	28
17	95.3	4.3	23
18	96.9	4.8	24
19	100.2	5.5	25
20	105.3	6.3	28
21	107.7	6.7	22
22	114.3	7.1	27
23	117.9	7.7	23
24	125.3	8.9	20
25	87.3	9.3	19
26	126.7	9.2	18
27	125.9	8.1	18
28	130.1	8.4	19
29	106.5	6.9	17
30	101.4	7.8	20

Dependent Variable	Sales
R Squared	0.826
Standard Error	9.52

Independent Variable	Coefficient	Standard Error	t statistic	Significance level
Advertising	7.09	0.615	11.541	0.000
Constant	58.27	3.415	17.063	0.000

Sales = Sales (million units)
Advertising = Advertising (£,000)

Dependent Variable	Sales
R Squared	0.834
Standard Error	9.47

Independent Variable	Coefficient	Standard Error	t statistic	Significance level
Advertising	5.77	1.329	4.339	0.000
Price	-0.607	0.538	-1.127	0.270
Constant	81.53	20.913	3.899	0.001

Sales = Sales (million units)
Advertising = Advertising (£,000)
Price = Price (pence)

Dependent Variable	Lsales
R Squared	0.828
Standard Error	0.107

Independent Variable	Coefficient	Standard Error	t statistic	Significance level
Lprice	-0.402	0.121	-3.323	0.002
Ladvertising	0.153	0.035	4.305	0.000
Constant	5.624	0.435	12.906	0.000

Lsales = Natural logarithm of sales (sales measured in million units)

Lprice = Natural logarithm of price (price measured in pence)

Ladvertising = Natural logarithm of advertising (advertising measured in £,000)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.942(a)	.888	.875	.08861

a Predictors: (Constant), dummy, Ladvertising, Lprice

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.611	3	.537	68.394	.000(a)
	Residual	.204	26	.008		
	Total	1.815	29			

a Predictors: (Constant), dummy, Ladvertising, Lprice
b Dependent Variable: Lsales

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	5.827	.364		15.997	.000
	Ladvertising	.153	.029	.547	5.236	.000
	Lprice	-.461	.101	-.481	-4.549	.000
	dummy	-.343	.093	-.250	-3.681	.001

a Dependent Variable: Lsales

Model Summary

Model	R	R Square	Adj. R Square	SE
1	.992	.984	.980	905.583

Coefficients[a]

Model		Unstandardized Coefficients		St. coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7839.368	1608.576		4.873	.000
	Com	1917.318	358.750	.146	5.344	.000
	ComSal	1163.105	382.537	.087	3.041	.004
	Prod1	-13808.830	332.592	-1.070	-41.519	.000
	Prod2	-7220.011	368.716	-.513	-19.582	.000
	Age	36.134	38.110	.040	.948	.349
	Divorced	-670.578	519.406	-.032	-1.291	.204
	Widowed	140.521	915.265	.004	.154	.879
	Married	-134.755	324.913	-.011	-.415	.681
	Experience	-59.736	49.849	-.048	-1.198	.238
	Hrs work.	69.514	7.567	.219	9.187	.000

Model Summary

Model	R	R Square	Adj. R Square	SE
1	.991	.982	.980	893.469

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8224.383	1141.460		7.205	.000
	Com	1920.542	322.614	.146	5.953	.000
	ComSal	1060.453	346.057	.079	3.064	.004
	Prod1	-13665.618	310.097	-1.058	-44.069	.000
	Prod2	-7049.803	328.040	-.500	-21.491	.000
	Hrs work.	70.444	7.040	.222	10.007	.000

Figure 4.10 Healthy residuals graph.

Figure 4.7 Non-constant error variance.

Figure 4.9 Non-independent error terms.

Ordinary Least squares Regression Results, Logarithmic Form
Dependent Variable: ln(profitability)

Variable	Coefficient	Standard error	t statistic	Significance value
ln(market share)	0.1487	0.0289	5.1404	0.000
ln(firm size)	-0.4716	0.1016	-4.6405	0.000
Accounting method	-3.4457	0.0941	-3.6597	0.001
Constant	2.5344	0.1236	20.4952	0.000
R-squared			0.8842	
Adjusted R-squared			0.8709	
S.E. of regression			0.0895	
F-statistic			66.2215	(0.000)
Durbin-Watson			1.5660	(0.029, 0.279)
Breusch-Godfrey serial correlation test			1.0098	(0.315)
Ramsey's RESET test			0.0982	(0.757)
LM heteroscedasticity test			0.0544	(0.815)
Jarque-Bera test			0.3499	(0.839)