

We Sell Beauty case study

We Sell Beauty (WSB) is a manufacturer and distributor of health and beauty products. WSB is interested in forecasting demand for 'Kesh', their shampoo brand which is sold in 100 ml bottles. WSB believes that the monthly demand for Kesh depends on the promotion expenditure (in thousands of rupees) and whether the competition was on promotion or not during the month. The data for 48 months (starting from January 2012) is shown in the following Table 1:

Table 1 Data on sales of shampoo, promotion expenses and promotion by competition

Month	Sale Quantity	Promotion Expenses	Competition Promotion	Month	Sale Quantity	Promotion Expenses	Competition Promotion
1	3002666	105	1	25	4634047	165	0
2	4401553	145	0	26	3772879	129	1
3	3205279	118	1	27	3187110	120	1
4	4245349	130	0	28	3093683	112	1
5	3001940	98	1	29	4557363	162	0
6	4377766	156	0	30	3816956	140	1
7	2798343	98	1	31	4410887	160	0
8	4303668	144	0	32	3694713	139	0
9	2958185	112	1	33	3822669	141	1
10	3623386	120	0	34	3689286	136	0
11	3279115	125	0	35	3728654	130	1
12	2843766	102	1	36	4732677	168	0
13	4447581	160	0	37	3216483	121	1
14	3675305	130	0	38	3453239	128	0
15	3477156	130	0	39	5431651	170	0
16	3720794	140	0	40	4241851	160	0
17	3834086	167	1	41	3909887	151	1
18	3888913	148	1	42	3216438	120	1
19	3871342	150	1	43	4222005	152	0
20	3679862	129	0	44	3621034	125	0
21	3358242	120	0	45	5162201	170	0
22	3361488	122	0	46	4627177	160	0
23	3670362	135	0	47	4623945	168	0
24	3123966	110	1	48	4599368	166	0

The table has the quantity of 100 ml bottles sold during the month, promotion expenses (in thousands of rupees) incurred by the company, and whether the competition was on promotion (value of 1 implies that the competition was on promotion and 0 otherwise).

Forecast the demand of Kesh for months 37 to 48. Calculate the values of MAPE and RMSE?