Coffee Shop Analysis Report

Data Provided

Product	Order Quantity	Sales Volume	Unit Cost	Unit Price	Demand Forecast
Coffee Beans	500	450	3,00 MAD	10,00 MAD	470
Espresso Machines	20	30	500,00 MAD	1 200,00 MAD	40
Coffee Grinders	60	90	800,00 MAD	1 700,00 MAD	95

Total calculations for each Product

Product	Costs	Revenues	Profits	Stock	Discount Rate
Coffee Beans	1 500 MAD	4 275 MAD ⬆	2 775 MAD ⬆	50	
Espresso Machines	10 000 MAD	24 000 MAD ⬆	14 000 MAD ⬇	-10	
Coffee Grinders	48 000 MAD	102 000 MAD ⬆	54 000 MAD ⬇	-30	
Totals	59 500 MAD	130 275 MAD	70 775 MAD		5%

Expanses, Incomes and Profits Trends
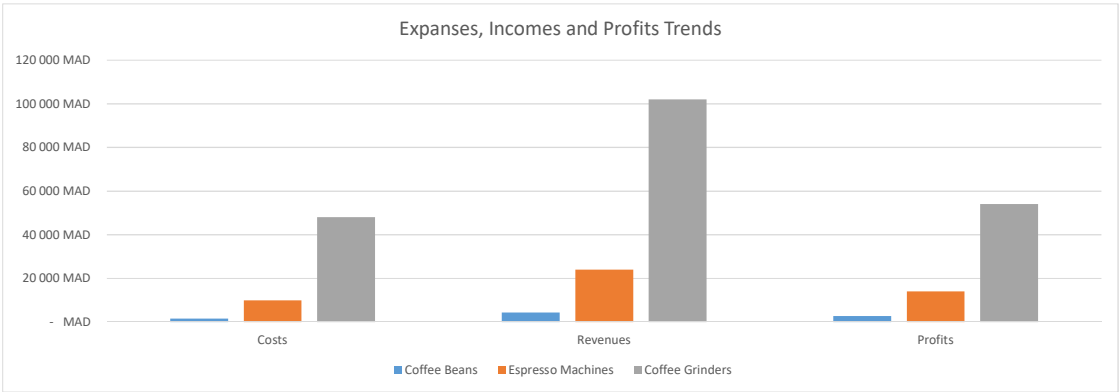
Discount Rate affect Profit

Rate	Profit
	70 775 MAD
1,50%	70932,5
2%	70910
2,50%	70887,5
3%	70865
3,50%	70842,5
4%	70820
4,50%	70797,5
5%	70775
5,50%	70752,5
6%	70730
6,50%	70707,5
7%	70685
7,50%	70662,5
8%	70640
8,50%	70617,5
9%	70595
9,50%	70572,5
10%	70550

Discount Rate vs. Profits
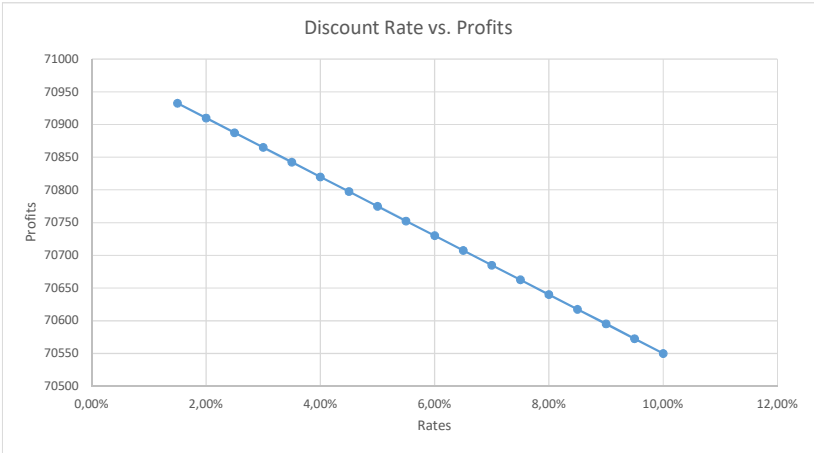
Profitability

Coffee Beans

Sales

2 775 MAD	200	300	400	500	600	700	800	900
200	1300	1300	1300	1300	1300	1300	1300	1300
300	1000	1950	1950	1950	1950	1950	1950	1950
400	700	1650	2600	2600	2600	2600	2600	2600
500	400	1350	2300	3250	3250	3250	3250	3250
600	100	1050	2000	2950	3900	3900	3900	3900
700	-200	750	1700	2650	3600	4550	4550	4550
800	-500	450	1400	2350	3300	4250	5200	5200
900	-800	150	1100	2050	3000	3950	4900	5850

Orders

Coffee Espresso Machines

Sales

14 000 MAD	15	20	25	30	35	40	45	50
15	10500	10500	10500	10500	10500	10500	10500	10500
20	8000	14000	14000	14000	14000	14000	14000	14000
25	5500	11500	17500	17500	17500	17500	17500	17500
30	3000	9000	15000	21000	21000	21000	21000	21000
35	500	6500	12500	18500	24500	24500	24500	24500
40	-2000	4000	10000	16000	22000	28000	28000	28000
45	-4500	1500	7500	13500	19500	25500	31500	31500
50	-7000	-1000	5000	11000	17000	23000	29000	35000

Orders

Coffee Grinder

Sales

54 000 MAD	30	40	50	60	70	80
30	27000	27000	27000	27000	27000	27000
40	19000	36000	36000	36000	36000	36000
50	11000	28000	45000	45000	45000	45000
60	3000	20000	37000	54000	54000	54000
70	-5000	12000	29000	46000	63000	63000
80	-13000	4000	21000	38000	55000	72000

Orders

Coffee Shop Model Forcasting

Data Provided

Month	Total Demand	Total Revenue	Cost
1	600	11100	8880
2	604	14500	11600
3	613	18100	14480
4	627	21900	17520
5	646	25900	20720
6	670	30100	24080
7	699	34500	27600
8	733	39100	31280
9	772	43900	35120
10	816	48900	39120
11	865	54100	43280
12	920	59500	47600

Demand Vs. Revenue
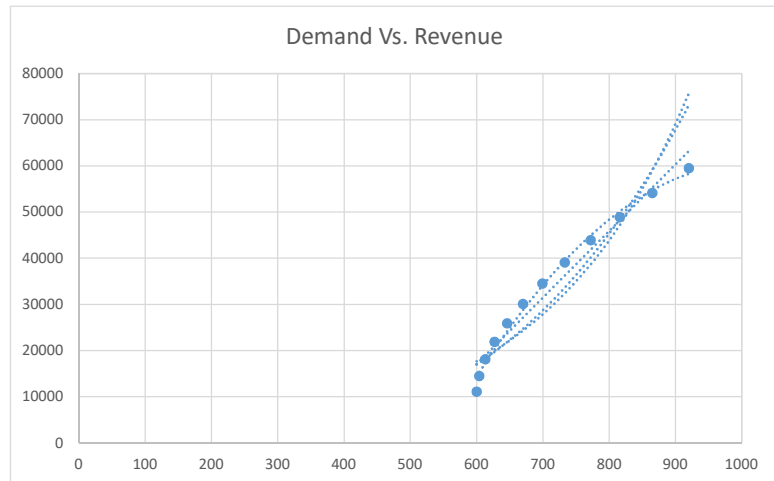
Equations

Linear	Power	Polynomial	Exponential
$y = 144{,}22x - 69469$	$y = 0{,}0000054x^{3{,}4190967}$	$y = -0{,}2737x^2 + 553{,}29x - 219056$	$y = 1156{,}2e^{0{,}0045x}$

Slope a	144,22	Constant a	0,0000054	Slope a1	-0,2737	Constant a	1156,2
Intercept b	69469	Exponent b	3,4190967	Slope a2	553,29	Exponent b	0,0045
				Intercept b	219056		

Predictions based on Models

Absolute Percentage Error

| Total Demand	Linear	Power	Polynomial	Exponential	Total Revenue	Linear	Power	Polynomial	Exponential
600	17063,00	17027,92	14386	17203,95	11100	54%	53%	30%	55%
604	17639,88	17419,19	15281,0208	17516,42	14500	22%	20%	5%	21%
613	18937,86	18322,75	17262,7947	18240,40	18100	5%	1%	5%	1%
627	20956,94	19793,47	20257,4227	19426,51	21900	4%	10%	8%	11%
646	23697,12	21920,50	24149,9508	21160,55	25900	9%	15%	7%	18%
670	27158,40	24832,29	28784,37	23573,87	30100	10%	18%	4%	22%
699	31340,78	28703,59	33963,6163	26860,02	34500	9%	17%	2%	22%
733	36244,26	33764,58	39449,5707	31300,65	39100	7%	14%	1%	20%
772	41868,84	40312,20	44963,0592	37305,43	43900	5%	8%	2%	15%
816	48214,52	48724,12	50183,8528	45473,91	48900	1%	0%	3%	7%
865	55281,30	59475,19	54750,6675	56692,32	54100	2%	10%	1%	5%
920	63213,40	73429,56	58311,12	72612,62	59500	6%	23%	2%	22%
					Averages	11%	16%	6%	18%

Ob: Polynomial is the model that fit our data forcasting since it has the lowest average of Absolute Percent Error 6%

Model the Business

Demanad	Predicted Revenue	Predicted Cost	Predicted Profit
1010	60565,53	48452,424	12113,106

Data Tables

Demands	Profits
	12113,11
410	-7643,21
420	-6990,98
430	-6349,69
440	-5719,34
450	-5099,95
460	-4491,50
470	-3894,01
480	-3307,46
490	-2731,85
500	-2167,20
510	-1613,49
520	-1070,74
530	-538,93
540	-18,06
550	491,85
560	990,82
570	1478,83
580	1955,90
590	2422,03
600	2877,20
610	3321,43
620	3754,70
630	4177,03
640	4588,42
650	4988,85
660	5378,34
670	5756,87
680	6124,46
690	6481,11
700	6826,80
710	7161,55
720	7485,34
730	7798,19
740	8100,10
750	8391,05
760	8671,06
770	8940,11
780	9198,22
790	9445,39
800	9681,60
810	9906,87
820	10121,18
830	10324,55
840	10516,98
850	10698,45
860	10868,98
870	11028,55
880	11177,18
890	11314,87
900	11441,60
910	11557,39
920	11662,22
930	11756,11
940	11839,06
950	11911,05
960	11972,10
970	12022,19
980	12061,34
990	12089,55
1000	12106,80
1010	12113,11
1020	12108,46

Profits by Demands
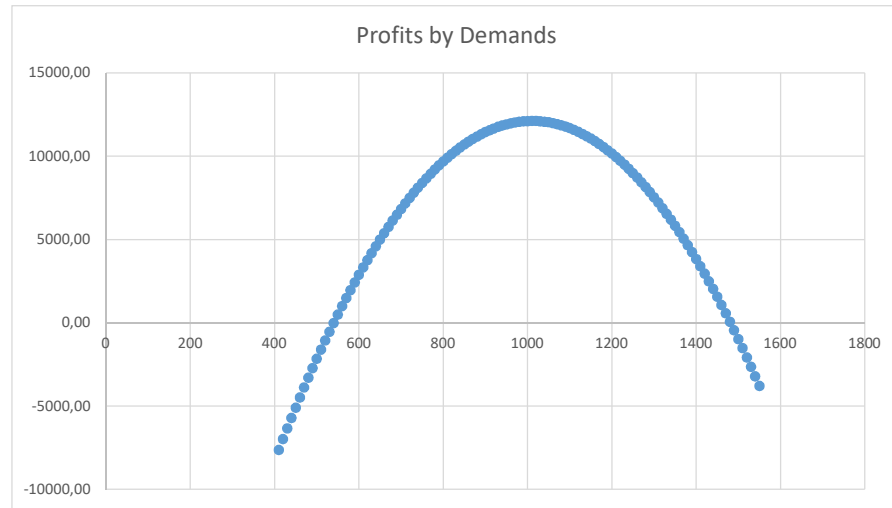
1030	12092,87
1040	12066,34
1050	12028,85
1060	11980,42
1070	11921,03
1080	11850,70
1090	11769,43
1100	11677,20
1110	11574,03
1120	11459,90
1130	11334,83
1140	11198,82
1150	11051,85
1160	10893,94
1170	10725,07
1180	10545,26
1190	10354,51
1200	10152,80
1210	9940,15
1220	9716,54
1230	9481,99
1240	9236,50
1250	8980,05
1260	8712,66
1270	8434,31
1280	8145,02
1290	7844,79
1300	7533,60
1310	7211,47
1320	6878,38
1330	6534,35
1340	6179,38
1350	5813,45
1360	5436,58
1370	5048,75
1380	4649,98
1390	4240,27
1400	3819,60
1410	3387,99
1420	2945,42
1430	2491,91
1440	2027,46
1450	1552,05
1460	1065,70
1470	568,39
1480	60,14
1490	-459,05
1500	-989,20
1510	-1530,29
1520	-2082,34
1530	-2645,33
1540	-3219,26
1550	-3804,15