Full Download: http://alibabadownload.com/product/new-products-management-10th-edition-crawford-solutions-manual/

Solutions to the Toolbox Exercises

ADBUDG Exercise

1	``	
1	a 1	
١.	ar	

<u></u>					
PROFIT ANALYSIS	SPRING	SUMMER	FALL	WINTER	TOTALS
ADVERTISING BUDGET (\$000s):	105	85	85	125	400
Quart. ind. sales (000s):	1650.00	1200.00	1350.00	1800.00	6000
Projected share:	34.30%	20.34%	18.98%	52.87%	31.62%
Projected sales (000s):	565.93	244.05	256.17	951.72	2017.86
Contrib. Mgn./Unit:	\$2.50	\$2.50	\$2.50	\$2.50	
Contrib. Mgn. (\$000s):	\$1,415	\$610	\$640	\$2 , 379	5044.6499
Minus Fixed Costs:					
Advertising costs:	\$105	\$85	\$85	\$125	400
Other fixed costs:	\$150	\$150	\$150	\$150	600
Total fixed costs:	\$255	\$235	\$235	\$275	1000
Contrib. to Profit:	\$1,160	\$375	\$405	\$2,104	\$4,045
Total Yearly Company Sales (C			2,018		
Total yearly profit contribut	ion (\$000s	5):		\$4,045	

The figure below shows an approximation of the response function:



ADBUDG ESTIMATES APPROXIMATE CURVE

1 | P a g e

(b) The hint to solving this part of the problem is that each season operates independently of each other. The student can begin with Spring, increasing advertising a little at a time and observing the changes in total contribution, which will continue to increase up to the point where marginal increases in advertising costs no longer outweigh marginal increased in contribution (stimulated by increasing advertising). Thus the student can zero in on the contribution-maximizing advertising level for Spring. The remaining seasons are handled in the same way. The contribution-maximizing advertising levels are given in the table below together with the resulting sales and contribution projections.

PROFIT ANALYSIS	SPRING	SUMMER	FALL	WINTER	TOTALS
ADVERTISING BUDGET (\$000s):	184	130	169	190	673
Quart. ind. sales (000s):	1650.00	1200.00	1350.00	1800.00	6000
Projected share:	60.96%	31.37%	44.37%	68.37%	51.27%
Projected sales (000s):	1005.92	376.44	598.94	1230.58	3211.8732
Contrib. Mgn./Unit:	\$2.50	\$2.50	\$2.50	\$2.50	
Contrib. Mgn. (\$000s):	\$2 , 515	\$941	\$1,497	\$3 , 076	8029.6831
Minus Fixed Costs:					
Advertising costs:	\$184	\$130	\$169	\$190	673
Other fixed costs:	\$150	\$150	\$150	\$150	600
Total fixed costs:	\$334	\$280	\$319	\$340	1273
Contrib. To Profit:	\$2,181	\$661	\$1 , 178	\$2 , 736	\$6 , 757
Total Yearly Company Sales (0			3,212		
Total yearly profit contribut	s):		\$6 , 757		

Solutions to The Toolbox Cases

AT&T Magicphone PFC¹

Question 1.

(a) The solution to this question makes use of the Delphi procedure outlined in the appendix to the case.

The first step in the procedure is to calculate each expert's expected value (EV) as follows:

 $EV_i = [Pessimistic + (4 x Most Likely) + Optimistic] / 6,$

where Pessimistic, Most Likely, and Optimistic are Expert i's three estimates respectively.

The input for the experts' projections for industry sales is provided in the case in a table in the section titled "Market Demand Estimation." The computation for Expert 1 is:

 $EV_1 = [150 + (4 \times 200) + 300] / 6 = 208.33$. (estimates are in thousands)

Similarly, the remaining nine computations yield expected values of 161.67, 178.33, 235, 184.17, 200, 263.33, 180.83, 208.33 and 169.17.

The Average Expected Value, AEV, is the most likely industry sales potential and is found by taking the average of the ten expected values derived above. This equals 198.92 (in thousands).

(b) To get the 95% confidence interval for the industry sales estimate, refer again to the Delphi procedure in the appendix to the case. First, obtain the standard deviation of each expert's estimate as follows:

 $SD_i = (Optimistic - Pessimistic) / 6.$

For Expert 1, $SD_1 = (300-150) / 6 = 25$.

Obtain all ten standard deviations and average them to get the Average Standard Deviation, ASD.

ASD = (25 + 18.33 + 15 + 15 + 10.83 + 20 + 16.67 + 14.17 + 18.33 + 17.5) / 10= 17.08.

The 95% confidence interval is then expressed as:

 $[AEV - 2 \text{ x ASD}] \le AEV \le [AEV + 2 \text{ x ASD}]$

 $= 198.92 - (2 \ge 17.08) \le 198.92 \le 198.92 + (2 \ge 17.08)$

The 95% confidence interval is thus an interval from 164.76 to 232.28 (in thousands).

(c) Confidence interval interpretation: Using the Delphi approach to assessing industry sales potential for integrated business communications systems, estimates from a panel of ten experts produced an average expected sales potential of 198,920 units. Because the experts were not unanimous in their estimates, i.e., there was some variation not only in their most likely estimates, but variation in the range of their pessimistic and optimistic estimates as well, there is some error contained in the point estimate. The confidence interval means that even though the point estimate of 198,920 may not be exact, we can have 95% confidence that the industry sales potential will be between 164,760 and 232,280.

Question 2.

(a) This question can be answered using the PERCEPTOR model of the Toolbox. According to information given in the "Target Market" segment of the case, the target market can be decomposed into two segments, the new market segment and the aftermarket segment. Also given in the case are the relative sizes of the two segments, 60% and 40% respectively. These data can be used as input to the PERCEPTOR model along with the convenience and productivity scores for the ideal and existing brands given in the case under "Competition and Positioning Analysis." The input screen for the PERCEPTOR model is shown below.

SITUATION ANALYSIS FOUR COMPETITORS IN	I INDUSTRY		
			SIZE OF SEGMENT
	ATTRIB. 1	ATTRIB. 2	REL. TO MARKET
IDEAL BRANDS BY SEGMENT			
Segment 1	3.5	2	0.4
Segment 2	1.75	3.75	0.6
Segment 3	0	0	0
ORIGINAL BRAND POSITIONS			
YOURBRAND	4.25	3.25	
Brand B	2.5	3	
Brand C	3.75	1.75	
Brand D	2	3.5	

(b) Based on the research indicating ideal brands for the aftermarket and new customers, we can assess which are the most serious competitors to Magicphone using the PERCEPTOR output provided below.

BRAND	SHARE IN	SHARE IN	SHARE IN	TOTAL
	SEG. 1	SEG. 2	SEG. 3	MARKET SHARE
YOURBRAND	14.62%	8.68%	20.04%	11.06%
Brand B	15.07%	20.87%	27.46%	18.55%
Brand C	60.27%	7.83%	25.91%	28.80%
Brand D	10.04%	62.62%	26.60%	41.59%
Size of				
Segment	40%	60%	0%	
(% of				
Total)				

Based on this output, Magicphone PFC should achieve an 11.06% share of the market, 14.62% of the aftermarket segment and 8.68% of the new market segment. The most serious competitor overall is Executone (Brand D) with a 41.59% share of the market, followed by TIE (Brand C) with 28.80% and Rolm (Brand B) with 18.55%. In the aftermarket segment, TIE is the most serious competitor with 60.27% share in this segment followed by Rolm with 15.07%, Magicphone PFC with 14.62% and Executone with 10.04%. In the new market segment, the industry leader is Executone with 62.62%, followed by Rolm with 20.87%, Magicphone PFC with 8.68% and TIE with 7.83%.

Question 3.

(a) Use the ASSESSOR model to make recommendations on the promotion budgets, assuming that total industry sales in 1995 are expected to be 20% of the industry sales in 1999 (as projected by the experts in the Delphi probe). The first step is to set the advertising, distribution and sales promotion response function indices for the ASSESSOR model, using data provided in the "Distribution and Availability" and "Advertising and Sales Promotion" sections. The indices screen for the ASSESSOR model is shown below:

SETTING THE ADVERTISING RESPO	ONSE FUNCTION				
Reference Budget:	\$2,000,000	Exponent:	1.3		
Minimum Share:	0.0%				
Maximum Share:	90.0%				
Awareness Prob. (K):	0.450				
SETTING THE DISTRIBUTION RESPONSE FUNCTION					
SETTING THE DISTRIBUTION RESP	PONSE FUNCTION				
SETTING THE DISTRIBUTION RESP Reference Budget:	\$2,000,000	Exponent:	0.9		
SETTING THE DISTRIBUTION RESP Reference Budget: Minimum Share:	\$2,000,000 \$2,000,000 5.0%	Exponent:	0.9		
SETTING THE DISTRIBUTION RESP Reference Budget: Minimum Share: Maximum Share:	\$2,000,000 \$2,000,000 5.0% 90.0%	Exponent:	0.9		
SETTING THE DISTRIBUTION RESP Reference Budget: Minimum Share: Maximum Share: Availability Prob. (D):	\$2,000,000 \$2,000,000 5.0% 90.0% 0.475	Exponent:	0.9		

SETTING THE SALES PROMOTION F	RESPONSE FUNCTION	N	
Reference Budget:	\$1,500,000	Exponent:	0.9
Minimum Share:	0.0%		
Maximum Share:	80.0%		
Prob. of Rec. Sample (C):	0.187		

The next step is to input the data for the ASSESSOR model itself. The 1995 industry sales figure for input to the ASSESSOR model is calculated as 20% of 198,920, which was derived from the Delphi probe. The 1995 industry sales figure is thus 39,784.

Contribution per unit was calculated as follows. Initial selling price of the Magicphone PFC is given as \$1175 in the "Magicphone PFC" section of the case, along with estimated variable costs of \$500. This gives a contribution per unit of \$675 (\$1175 - \$500). Other entries in this model are found in the "Advertising and Sales Promotion" section of the case.

AGEGGOD MODEL		<u> </u>	τζ.	
ASSESSOR MODEL	Aavertising:	⇒∠,000,000	к:	0.450
	Distribution:	\$2,000,000	D:	0.475
	Sales Promo.:	\$1,500,000	C:	0.400
Contribution Per Unit	:	\$675.00		
Long-Run Trial Probat	pility (F)	0.9		
Prob. Of Trying a Rec	ceived Sample (U)	1		
Prob. Of Switching to	New Brand (Qkz)	0.7		
Prob. Of Repurchasing	g New Brand (Qzz)	0.8		
Projected Ultimate Pe	enetration	0.52		
Projected Ultimate Re	epeat	0.78		
Projected Long-Run Ma	arket Share	40.1%		
Industry Sales Projection		39784	units	
Projected Company Sal	les	15949	units	
Variable Contribution Margin				\$10,765,476
Fixed Costs: Marketir	ıg	\$5,500,000		
Other		\$2,800,000		
Total Fixed Costs				\$8,300,000
Total Profit Contribu	ition			\$2,465,476

Using the initial budget figures of \$2 million for advertising and distribution and \$1.5 million for sales promotion, the predicted long-run market share for Magicphone is 40.1%, and the predicted total profit contribution for Magicphone in 1995 is \$2,465,476.

Different recommendations can be made for the advertising, distribution and sales promotion budgets by entering alternative figures into the input cells and observing the effect on the other output variables such as market share and total profit contribution. One possible recommended solution, that stays within the total budget of \$5.5 million is to set advertising at \$1.2 million, distribution at \$1.5 million, and sales promotion at \$2.8 million. The resulting market share is 44% and the total profit contribution is \$3,526,626, which is a substantial improvement on the initial allocation of the same \$5.5 million budget.

ASSESSOR MODEL	Advertising:	\$1,200,000	К:	0.306
	Distribution.	\$1 500 000	D•	0.420
		\$1,500,000	D.	0.420
	Sales Promo.:	\$2,800,000	C:	0.509
Contribution Per U	nit	\$675.00		
Long-Run Trial Prol	bability (F)	0.9		
Prob. of Trying a 1	Received Sample (U)	1		
Prob. of Switching	to New Brand (Qkz)	0.7		
Prob. of Repurchas.	ing New Brand (Qzz)	0.8		
Projected Ultimate	Penetration	0.57		
Projected Ultimate	Repeat	0.78		
Projected Long-Run	Market Share	44.0%		
Industry Sales Projection		39784	units	
Projected Company	Sales	17521	units	
Variable Contribut	ion Margin			\$11,826,626
Fixed Costs: Marke	ting	\$5,500,000		
Other		\$2,800,000		
Total Fixed Costs				\$8,300,000
Total Profit Contr	ibution			\$3,526,626

(b) The chart below shows a sensitivity analysis on long-run market share with 10% variations in each direction for each of the three promotion budgets. It shows that, long-run market share is slightly more sensitive to variations in sales promotion, and least sensitive to changes in distribution.

Advertising	Distribution	Sales Promotion	L.R. Mkt. Shr. (%)
	Origi	nal	
2,000,000	2,000,000	1,500,000	40.1
10% Variations			
1,800,000	2,000,000	1,500,000	39.5
2,200,000	2,000,000	1,500,000	40.6
2,000,000	1,800,000	1,500,000	39.7
2,000,000	2,200,000	1,500,000	40.4
2,000,000	2,000,000	1,650,000	41.2
2,000,000	2,000,000	1,350,000	38.9

Question 4.

First, compute the industry sales for the five year period as follows:

1999 200,000 (rounded for ease of computation)

1998	(80%)	160,000
1997	(50%)	100,000
1996	(30%)	60,000
1995	(20%)	40,000

Next, compute Magicphone's estimated sales using previously derived market share estimates (in this solution, 40% market share will be assumed for Magicphone; others are acceptable depending on student responses to earlier questions). Magicphone's sales are thus calculated as 40% of the above industry sales figures, i.e., 16,000, 24,000, 40,000, 64,000 and 80,000 for 1995 through 1999. These figures are entered into the FINANCIAL input screen. Other inputs are given in the case.

Year	0	1995	1996	1997	1998	1999
Unit sales	0	16000	24000	40000	64000	80000
Revenue per unit	0	1175	1175	1175	1175	1175
Dollar sales	0	18800000	28200000	47000000	75200000	9400000
Production costs:						
Direct	0	8000000	12000000	20000000	32000000	4000000
Indirect	0	2800000	2800000	2800000	2800000	2800000
Total	0	10800000	14800000	22800000	34800000	42800000
Gross profit Direct marketing	0	8000000	13400000	24200000	4040000	51200000
costs Profit	0	5500000	5500000	5500000	5500000	5500000
contribution Overheads (excluding R&D):	0	2500000	7900000	18700000	34900000	45700000
Division	0	10000000	10000000	10000000	10000000	10000000
Corporate	0	100000	100000	100000	100000	100000
Total	0	10100000	10100000	10100000	10100000	10100000
Other expenses:						
Depreciation	4000	8891	9382	9382	9382	491
Cannibalization R&D to be	0	9375000	0	0	0	0
incurred Extraordinary	0	940000	1410000	2350000	3760000	4700000
expense Project	0	0	0	0	0	0
abandonment	0	0	0	0	0	0
Total Overheads and	4000	10323891	1419382	2359382	3769382	4700491
expenses Income before	4000	20423891	11519382	12459382	13869382	14800491
taxes	-4000	-17923891	-3619382	6240618	21030618	30899509
Tax effect:						
Taxes on income	-1360	-6094123	-1230590	2121810	7150410	10505833
Tax credits	0	0	0	0	0	0
Total effect	-1360	-6094123	-1230590	2121810	7150410	10505833
Cash flow:						

FINANCIAL WORKSHEET

Income after						
taxes	-2640	-11829768	-2388792	4118808	13880208	20393676
Depreciation	4000	8891	9382	9382	9382	491
Production						
facilities	20000	19562	1964			
Working capital:						
Cash	0	1880000	940000	1880000	2820000	-7520000
Working capital:						
Inventories	0	1880000	940000	1880000	2820000	-6016000
Working capital:						
Acc. Rec.	0	2820000	1410000	2820000	4230000	-11280000
Net cash flows	-18640	-18420439	-5671374	-2451810	4019590	45210167
Discounted flows	-18640	-16017773	-4288374	-1612105	2298214	22477443
Net present value	2838765					

Net present value is calculated at \$2,838,765, and the payback is during Year 4 (1998).

Question 5.

(a) The input data for the PRICING model are found in the case in the "Pricing" section. The price for the Magicphone has been given previously as \$1175. The prices for the old fax machines A and B are given as \$800 and \$700. The input screen for the PRICING model is given below.

SPREADSHEET 1	NEW BRAND	OLD	OLD
		BRAND A	BRAND B
Manuf. Selling Price	\$1,175.00	\$800.00	\$700.00
Quantity Sold (000s)	16	25	25
Variable Costs	\$500.00	\$400.00	\$350.00
Contr. Mgn. Per Unit	\$675.00	\$400.00	\$350.00
Contr. Margin (\$000)	\$10,800	\$10,000	\$8 , 750
Fixed Costs (\$000)	\$8,300	\$6,000	\$6,400
Contr. to Profit (\$000)	\$2 , 500	\$4,000	\$2 , 350

The quantity sold for the Magicphone, 16,000, is based on the ASSESSOR model input for 1995 developed in Question 3. Variable cost for Magicphone is also derived in Question 3, and the variable costs for the other two machines are given in the case. Finally, fixed costs for Magicphone are obtained from previous models, and the fixed costs for Machines A and B are given in the case.

In addition to the inputs described above, the elasticity of demand for Magicphone and the crosselasticities between Magicphone and the two old machines need to be entered in the PRICING model. These elasticities can be found in the "Pricing" section of the case. Direct overhead of \$10,000,000 for AT&T is given in the case. The resulting spreadsheet is given below.

New Products Management 10th Edition Crawford Solutions Manual

Full Download: http://alibabadownload.com/product/new-products-management-10th-edition-crawford-solutions-manual/

SPREADSHEET 2	NEW BRAND	OLD BRAND A	OLD BRAND B	COMPANY
				TOTALS
Manuf. Selling Price	\$1,175.00	\$800.00	\$700.00	
Price Elast. of Demand	-2			
Cross-Elasticity				
With New Brand		1.1	1.3	
Quantity Sold (000s)	16.00	25.00	25.00	66
Variable Costs	\$500.00	\$400.00	\$350.00	
Contr. Mgn. per Unit	\$675.00	\$400.00	\$350.00	
Contr. Margin (\$000)	\$10,800	\$10,000	\$8 , 750	
Fixed Costs (\$000)	\$8,300	\$6,000	\$6,400	
Contr. to Profit (\$000)	\$2,500	\$4,000	\$2 , 350	\$8,850
Indirect O/H (\$000)				\$10,000
Company Profit (\$000)				(\$1,150)
AFC per Unit	\$518.75			

- (b) Cannibalization is definitely an issue, since the Magicphone is a substitute for the older models, and Brand A provides a nice contribution to company profits. Brands A and B are, however, old technologies and, in this industry, are likely to be obsolete soon. If AT&T is committed to staying at the forefront of technology, it has to accept the shortterm costs of cannibalization.
- (c) Sensitivity analysis shows that company profitability is influenced by modest changes in price (see table below). Keep in mind that the elasticity estimates are likely to be useful over only a small range of prices, so it is not clear that AT&T can expect the level of demand for Magicphone predicted by the model for a price of \$1300. The analysis does suggest, however, that price increases ought to be investigated by AT&T.

Magicphone Price (\$)	Company Profit (\$000)
1100	3355
1150	4231
1175	4650
1200	5058
1250	5845
1300	6597