Answers to End‑of‑Chapter Questions ‑ C‑5

1. A gap in selective demand results from a difference between industry sales and company sales. Unless the firm is a monopoly this gap is' expected. However, two factors to investigate would be the size of **the gap and whether** it is getting larger or smaller. Essentially the manager must look at market share. Does the firm's market share compare favorably to firms in the industry?

2. To answer this question the student must first combine some of the categories in the Table as show below

STATE Under $150,000 $150,000 6 < $300,000 $300,000 +

NC 1,113.7 89‑:4 15.0

VA 876.8 249.3 66.0

To determine the potential for each market, the student should multiply the percent of users in each range by the number of units in each range. The total for each state is the potential. We provide the calculation below

NC = (.015 \* 1,113.7) + (.03 \* 89.4) + (.04 \* 15) = 19.99

VA = (.015 \* 876.8) + (.03 \* 249.3) + (.04 \* 66) = 23:27

There are more household in NC than VA, however, the potential is greater in VA. The reason is that there is a relationship between the demand for the security device and the value of the home. The greater the value, the greater the appeal. Virginia, has more high valued houses than North Carolina.

3. The student will have to use secondary sources to answer this question. We provide the data below.

Shipment in millions

STATE

sic CA OH TX NJ

3411 1,720.6 877.8 795.4 500.0

3412 106.0 150.4 104.7 115.5‑

To answer this question the student can use the approach demonstrated in Table 5‑3. First we sum the value of

shipments for Ohio, which is (877.8 + 150.4) 1,028.2. Next we multiply by .4% or .004, the value related to the cost of the solvent, which is (1,028.2 \* .004) 4.1128. We now multiply this by a million which gives us $4,112,800 for the Ohio area. The Ohio salesrep is considered good therefore we can

calculate a reasonable pergentage by dividing this reps sales by the total sales: 1,250,OOOJ4,112,800 = 30.39. We could then set quotas for the other states as being 30.39$ of total potential. These quotas, in millions, would be:

CA = 2.22

TX = 1.09

NJ = 0.75

4. The budget is $5 million and the task is to allocate it proportionally to construction and manufacturing for the four geographic regions. Construction accounted for 65$ of the past business and will therefore receive a budget of $3,250,000, 65$ of the $5 million budget. Manufacturing will receive the remaining $1,750,000. The allocation will be based on the proportion of employs (by industry) by the geographical regions: These proportions are reported below:

REGION INDUSTRY

CONSTRUCTION MANUFACTURING

Northeast 16.4 19.8

Midwest 23.1 30.0

South 38.8 33.0

West 21.7 17.2

The budget allocations are:

REGIONS INDUSTRY

CONSTRUCTION MANUFACTURING

Northeast $ 533,000 $346,500

Midwest 750,750 525,000

South 1,261,000 577,500

West 705,250 301,000

5. The first step is to calculate‑the survival rate

Units Units

Year of Age of Scrapped Survival Remaining

Purchase Product in 1996 Rate end of 1996

1996 1 15$ 85$ 85$

1995 2 25$ 75$ 64$

1994 3 50$ 50$ 32$

1993 4 100$ 0$ 0$

Now the replacement potential can be calculated

Year Industry Percent Left Number Left Annual 1997

Product Sales at start of at start of Scrapping Replacement

was sold (in 000'x) 1997 1997 Rate Potential

1996 5,250 85 4,462 15 669

1995 6,479 64 4,146 25 1,036

1994 4,890 32 1,564 50 782

1993 4,798 0 0 2,487

6. There are two important factors to consider when formulation a multiple‑corollary index: (1) what factors are to be measured and will they be of equal weight. Notice that the Buying Power Index, a famous multiple‑corollary index, uses three factors: People, Money and the‑.willingness to spend, and the weights are .5 for income, .3 for retail sales, and .2 for population.

7. Here the students will calculate a BPI for the six New England states. The calculations are provided‑below. In each case we first must get the percent of the O. S. for .the three measures and then use the following formula

BPI = (.5) ($ Income) +

(.3) ($ Retail Sales) +

(.2) ($ Population)

RETAIL

STATE INCOME SALES POPULATION BPI

CT .0169 \_ .0144 .0120 .0152

ME .0043‑ ‑ .0052 .0047 .0046

MA .0269 .0234 .0231 .0251

NH .0050 .0057 .0044 .00511.

RI .0037 .0034 .0038 .0036

VT .0012 .0040 .0022 .0018

The rankings would be

RANK STATE BPI

1 MA .0251

2 CT .0152

3 NH .0051

4 ME .0046

5 RI .0036

6 VT .0018

8. Atop‑down approach means that top management set sales goals and quotas and these are passed onto the sales managers and salespeople in the territories. Top management has a good perspective on corporate goals and objectives, but is removed

from the field. There may be some extenuating circumstances that would call for the forecast to be either too optimistic or too pessimistic. For example, top management may not be aware of all recent actions by the competition or changing social/demographic characteristics in specific territories. Alternatively, a bottom‑up approach begins with the salespeople in the field setting goals for their territories and then aggregating these forecast until there is one number for the corporation.

A useful approach, as described by UPS in the chapter, is to use both a top‑down and a bottom‑up approach. The estimates keep going back and forth until a forecast that is acceptable to both salespeople and management is determined.

9. We have provided the forecasts below.

SINGLE MOVING AVERAGES:

ACTUAL

YEAR VALUE

3‑YEAR FORECAST

VALUE ERROR

1986 34400.00

1987 42125.00

1988 46750.00

1989 52765.00 41091.67 11673.33

1990 54890.00 47213.33 7676.67

1991 56000.00 51468.33 4531.67

1992 66780.00 54551.64 12228.33

1993 67500.00 59223.33 8276.67

1994 73500.00 63426.67 10073.33

1995 76890.00 69260.00 7630.00

1996 72630.00

EVALUATIVE MEASURES:

SUM OF FORECAST ERRORS = 62090.0000

AVERAGE FORECAST ERROR = 8870.0000

VARIANCE = 6102848.5000

STANDARD DEVIATION =‑2470.3945

MEAN ABSOLUTE ERROR = 0.1406

SINGLE EXPONENTIAL SMOOTHING:

ACTUAL

YEAR VALUE

1986 34400.00 1987 42125.00 1988 46750.00 1989 52765.00 1990 54890.00

3‑YEAR FORECAST

VALUE ERROR

34400.00 7725.00

39035.00^‑ 7715.00

43664:0 9101.00

49124.60 5765.40

1991 56000.00 52583.84 3416.16

1992 66780.00 54633.54 12146.46

1993 67500.00 61921.41 5578.59

1994 73500.00 \_ 65268.57 8231.43

1995 76890.00‑` 74216.97 6682.57

1996 74216.97

EVALUATIVE MEASURES:

SUN OF FORECAST ERRORS = 66361.6094

AVERAGE FORECAST ERROR = 7373.5122

VARIANCE = 5409708.0000

STANDARD DEVIATION = 2325.8779

MEAN ABSOLUTE ERROR = 0.1278

REGRESSION: ‑­

ACTUAL 3‑YEAR FORECAST

YEAR VALUE VALUE ERROR

1986 34400.00 36734.36 ‑2334.36

1987 42125.00 41273.39 851.61

1988 46750.00 45812.43 937.58

1989 52765.00 50351.45 2413.54

1990 54890.00 54890.48 ‑0.49

1991 56000.00 59429.52 ‑3429.52

1992 66780.00 63968.55 2811.45

1993 67500.00 68507.58 ‑1007.58

1994 73500.00 73046.61 453.39

1995 76890.00 77585.64 ‑695.64

1996

EVALUATIVE NEASURES:

SUN OF FORECAST ERRORS = ‑0.0049

AVERAGE FORECAST ERROR = ‑0.0005

VARIANCE = 3424927.2500

STANDARD DEVIATION = 1850.6559

MEAN ABSOLUTE ERROR = 0.0287

10. The estimate is 14 million units with a standard error of 1,560,000. Therefore there is a 95$ chance that sales will be within (+/‑ 2 standard errors) the range of

10,880,000‑to.17,120,000.

Based on the information in the question, we would recommend producing on the high side. The product is not perishable, therefore it can be stored if we overproduce. There will be inventory costs, however, notice that the contractors will switch if it is not in stock. Therefore the cost of losing business is probably greater than the cost of inventory.

LAVACA FABRIC MANUFACTURING COMPANY

Lavaca Fabric Manufacturing Company manufactures and markets all­cotton "wipe rags" used by wey11‑servicing firms and oil producing firms to clean the cables and push‑rods used in lifting crude oil to the surface by oil well pumps. Wipes, when saturated with a cleaning solvent, remove materials collected on the cables and push‑rods. On the average, 4 wipes are used per well per week. Hundreds of thousands of these wipes are used annually by the oil and gas industry world‑wide. Last year Lavaca, a major supplier of wipes, captured about 214 of an estimated $5,000,000 international wipe rag market.

Wipes are sold in 2o‑pound cartons with 80 wipes per carton to well‑servicing firms and oil producing firms by oil field supply firms located near the producing oil fields. Lavaca markets its wipes through industrial distributors who sell to the oil field supplier. The industrial distributor maintains a markup of 433 on its cost of goods, while the oil field supply firm typically maintains a markup of 38$ on its selling price.

Wipe rags are sold to the oil and gas industry in four qualities depending on the density of the weave and the denier or thickness of the thread used in its manufacture. Well‑servicing firms choose one of these qualities depending on the properties of the crude oil in an oil field. The schedule of prices paid by well‑servicing and other user firms is given below.

Price per Percent of

Carton Total Sales

Best Quality: $64.00 208

Better Quality $50.00 40$

Good Quality $44.00 25$

Standard Quality $28.00 15$

Lavaca has manufactured wipes for over fifty years and has a good cost accounting system that accurately estimates the costs of manufacturing and marketing their wipe rages, Lighthouse brand. Although Lavaca has varying costs for each quality of wipe rag, management has generalized its manufacturing unit variable cost. to be $0.1375 per rag. Wipe rags are shipped in boxes that when properly utilized allows the oil field supply firm to convert it to a point‑of‑sale: display that holds 20 cartons of wipes. The display/shipping boxes are purchased from a paper products vendor for $129.60 per bundle containing 6 dozen boxes. Direct manufacturing costs such as ,inventory carrying costs and depreciation on transportation equipment total approximately $160,000 annually. Additionally, it is anticipated that Lavaca's direct manufacturing costs for the coming year will increase by $20,000.

Lavaca sells to industrial distributors using a small sales force of four field sales representatives and an in‑house telephone sales person located at the home office who takes telephone orders and sells direct to its international accounts. About 10% of Lavaca's sales come from international customers. The four field representatives earn a 4$ commission‑on their sales to industrial distributors plus a base salary of $3,000 per month. The in‑house telephone sales person is paid a salary of $1,500 per month. and a year‑end bonus of $2,000 if Lavaca achieves its in‑sales goal. It should be noted that the sales goal has always been achieved.

Lavaca markets primarily in Texas, Louisiana, New Mexico and Oklahoma. A small competitor of wipe rags recently went out of business and leaving an opportunity for Lavaca in the Kansas, Colorado and Wyoming market. If Lavaca should decide to enter this market they know they will incur some up‑front costs for working capital and fixed assets, primarily the cwt of borrowing working capital, purchase of anew delivery truck for about $80,000, and the cost of supporting a new sales person to cover the area including an automobile costing $16,000. The imputed cost of borrowing working capital and purchasing the truck and car for this market expansion effort is estimated to be nearly $7,000 annually.

The new sales person will be compensated the same as the other four field sales representatives; however, there is an up‑front training cost of $15,000. The new truck and automobile are amortized on a straight‑line 4‑year schedule.

Question: If Lavaca elects to enter the new market what is the required level of dollar sales necessary to earn the same rate of return of contribution to margin to sales as last year?

To arrive at this answer you will need to answer the following about last year's operation:

a. Lavaca's unit selling price

b. Lavaca's uvcm and.pvcm

c. Lavaca's contribution to margin (CTM)

d. Lavaca's rate of return (ROR) on CTM to Sales

Question: The small competitor who went out of business in the Kansas, Colorado and Wyoming markets reported it had generated $180,000 in wipe rag sales last year. You also know that there are approximately 15,000 producing oil wells in this market. Given this information should Lavaca enter the market? Why do you say this?

LITTLE DOMINIC'S

1. As indicated belt, Griffith can use four corollary factors, each of which provides very ‑comparable estimates of relative market potential. The only noticeable difference among the four is that Louisville has a slightly larger relative potential and Dayton a slightly lower one when retail sales of eating and drinking establishments are used. This may reflect the fact that Louisville restaurants draw relatively more customers (and Dayton restaurants draw ‑relatively fewer customers) from outside the SKSA. However, it is not likely that pizza parlors will benefit from this information as much

as larger restaurants.

Percentaaes of Six‑Market Totals

Eating

Drinking

BPI Population Under‑34 population Estab. Sales

Indianapolis 20.0 19.6 19.7 19.2

Louisville 15.8 16.0 15.9 17.4

Evansville 4.7 4.7 4.5 4.9

Cincinnati 23.4 23.2 23.1 ‑ 23.5

Columbus 21.0 21.0 21.7 21.3

Dayton 15.3 15.4 15.1 13.8

2. Additional information desired:

• Are sales of pizza parlors the same as a percentage of

eating and drinking establishment sales in all six

markets?

• Does Little Dominic's have the same share in each market

(i.e., is it a "star" in some markets but a "problem

child" in others)?

• Competitive spending levels (the value of this

information is discussed in Chapter 6).

ACHE GLOVE

1.

Average Total

Gloves Employ‑ Percent in Gloves

County Estimated Estimate ment U.S. (12 per Emp.)

Harris 70 1495 8,720 0.186 104,652

Tulsa, Oklahoma 25 1167 2,432 0.051 \_‑ 29,184

Denver, Colorado 25 910 1,896 0.040 22,756

Midland, Texas 33 625 1,720 0.036 20,640

Oklahoma, Oklahoma 45 462 1,733 0.037 20,796

Dallas, Texas 22 870 1,596 0.034 19,152

Natrona, Wyoming 31 565 1,462 0.031 17,544

LaFayette, LA 23 719 1,379 0.029 16,548

Caddo, Louisiana 29 503 1,2‑16 0.025 14,592

Sedgevick, Kansas 47 291 1.140 0.024 13.680

Total 350 23,294 0.497 279,540

Total U.S. 1126 48,825 1.00 585,900

Potential in Dollars:

Top Ten 279,540 X $17 = $4,752;180 Total U.S. Q 17 $ 9,960,300

279,540 X $20 = $5,590,800 Total U.S. @ 20 $11,718,000

Average Gloves per Establishment:

Top Ten 279,540 + 350 = 799

585,900 s 1126 = 520

2. He `could be able to estimate the maximum level of sales Acme could obtain.

TRIPLE CAST

1. Market potential could be estimated by assessing the number of ho=es that would be wired and the percentage that would watch non‑prime time telecasts (a measure of willingness to buy).

2. NBC had no real experience in this category. Their judgment would not be as valuable as those of cable operators. Since the maxima buy rate from prior PPV telgcasts'‑was 7.8$, that would seen to have been a reasonable starting'point.

3. While PPV itself may be projectible via diffusion modeling, a given event is not easily modeled this way. There is really no time for word‑of‑mouth communication for a single event.

4. The main cost of overestimation was the rights fees. NBC simply paid too much on the assumption that PP'V sales would be substantial. The other costs (equipment for wiring homes) could at least be used for future PPV adventure. The risk of underestimation was that NBC would bid too brand not receive the contract. = One might assume that this was the risk they wished to avoid. The 'forecast`‑ may even have been a wish to justify the desire to be the Olympic channel:

LAVACA FABRIC MANUFACTURING COMPANY

SOLUTION

OBJECTIVES

In addition to the typical profitability analysis exercise, this mini­case asks the student to:

1. Calculate a weighted average price.

2. Backward price beginning with the user selling price to find

the manufacturer's selling price.

3. Covert percentage mark‑up on cost to percentage mark‑up on

selling price.

4. Calculate the rate of return on contribution to margin. and

use this value to estimate the‑ new required level of sales.

For the bonus question the student must:

5. Calculate market potential in units and dollars

6. Compare current market share performance applied to a new market's potential against the required level of sales necessary to achieve the firm's profit objective.

1. Lavaca's annual sales for the past year

Industry sales $5,000,000

Company market share 21%

Company sales $5,000',000 X .21 = $1,050,000

2. Lavaca's manufacturing unit selling price (weighted average

price)

Price per Percent of • Weighted

Product Mstr. Crtn. Tot. Sales Price

Best Quality $64.00 20$ $12.80

Better Quality $50.00 408 $20.00

Good Quality $44.00 25$ $11.00

Standard Quality $28.00 15$ S 4.20

Weighted Average User Price

(Oil Field Supply Selling Price)$48.00

Old Field Supply Dollar Markup

(.38 m/u on selling price X $48.00) 18.24

Industrial Distributor Selling Price $29.76

Industrial Distributor Dollar Markup

(.43$ m/u on cost converts to:.43/1.43) \_

.3007 m/u on selling price X $29.76 S 8.95

Lavaca Manufacturing unit selling price $20.81

3. Estimating Lavaca's UVCCM, PVCM, TVCM,CTX, & Rate of Return on CTM

Unit Variable Costs:

Manufacturing: $0:1375 per wipe X 80 wipes = $11.00

per master carton

marketing: Out side sales force sales = 90$ of total sales

.04 Commission X .90 = .036

.036 X $20.81 = $ .75

Display carton = $1.80/20 masters .09

WC $11.84

WCM ($20.81 ‑ $11.84) $ 8.97

PVCM ($8.97 = $20.81) 43.1$

Total Variable Contribution to margin (TVCM):

$1,050,000 X .431 = $452,550

Direct Fixed Costs:

Sales Force

(4 people X $3,000/mo. X 12 months) \_ $144,000

In‑house sales repr.

($18,000 + $2,000 bonus) + 20,000

Manufacturing $160.000 $324,000

Contribution to margin (CTM)

(Contribution to overhead & Profit) $128,550

Rate of Return on CTM to Total Revenue:

(128,550 + $1,050,000) = 12.24$

Required level of sales to enter new market and achieve current rate of return on CTM of 12.243

Old Direct Fixed Costs: $324,000

New Direct Fixed Costs:

Manufacturing $ 20,000

New sales person: salary 36,000

Training 15,000

Working Capital 7,000

Depreciation on truck and car

($80,000 + $16,000) + 4 years = $\_24.000 2S1~000

$426, 000

Required Level of Sales:

gFC`+ CTM Oblg~rtiiye

PVCM

$426,000 + .1224 CTM = $426.000 $1,380,428

.431 .3086

Additional required level of sales to enter the new market:

($1,380,428 ‑ $1,050,000) = $330,428

5. Should Lavaca enter the new market knowing the exiting company

earned $180,000 in wipe sales last year?

Market Potential: 15,000 well X 4 wipes/week X 52 weeks =

80/carton = 39,000

Market Share: 39,000 master cartons X .21 (current share)­8,910 cartons

Expected Sales: 8,910 cartons @ $20.81 each = $170,000 Total revenue

Lavaca should not enter the market if it plans to make these additional outlays and must soot the 12.24$ CRK profit objective. Required level of sales for the venture is over $330,000 and estimated revenue, given its current market share in the industry, is only $170,000.