CASES FROM MANAGEMENT ACCOUNTING PRACTICE

CASES FROM MANAGEMENT ACCOUNTING PRACTICES

Forward

This Web site contains the 10 teaching cases presented at the Management Accounting Section 2001 Research and Case Conference, January 18-20, 2001 in Savannah, Georgia. These cases were selected from 29 teaching cases that were submitted for presentation at the conference and publication by the IMA.

I thank the authors for developing these cases, writing teaching notes, class testing the cases and presenting their materials at the Conference. The members of the editorial board join me in applauding the authors for a job well done.

I also thank the discussants at the Conference for their insightful comments, as well as the Conference organizers and the AAA staff who work hard to make these conferences successful.

Jim Mackey, my co-chair of the case portion of the Conference, did most of the work in putting the case portion of the Conference together. Jim Brackner helped immensely in providing a link between the IMA and the Management Accounting Section.

I thank IMA for its support, particularly Leslie Estelle, who was essential to getting these cases published.

Finally, I thank the members of the Editorial Board for their advice and for reviewing the cases. The Board members are:

Tom Albright
Wayne Bremser
Paul Juras
Ken Merchant
Gary Sundem
Jim Mackey, co-chair of the case symposium
Michael Maher, co-chair of the case symposium

Michael W. Maher, Editor

April 13, 2001

FIGURE EIGHT ISLAND HOMEOWNERS' ASSOCIATION, INC.

Case Study

by

Howard O. Rockness
Professor of Accounting
University of North Carolina – Wilmington

Joanne W. Rockness
Camerson Professor of Accounting
University of North Carolina – Wilmington

Charles L. Earney
Partner, Earney & Company CPAs
Assistant Professor
University of North Carolina – Wilmington

William J. Mayew
Staff Accountant
Ernst & Young
Raleigh, NC

Figure 8 Island Homeowners Association, Inc.

"The property owners of Figure Eight Island have joined together to preserve and enhance the natural beauty of the island and to maintain property values"

Article II, Bylaws of Figure 8 Homeowners Association, Inc.

Mike Powell, President of the Figure 8 Homeowners Association, left the homeowners meeting confused. The meeting was intended to be informative and detail the long-range plan adopted by the Homeowners Association to preserve the island. Instead, it turned into a war of words between property owners.

It was common knowledge that Figure 8 Island desperately needed beach restoration (called renourishment) on the ocean side and canal dredging on the sound side. And, while the homeowners of the island wanted the restoration process to begin as soon as possible, little consensus could be reached as to who would bear the costs. Mike Powell thought the Homeowners Board of Directors presented a fair and equitable cost-allocation scheme. The homeowners thought differently.

THE ISLAND

Figure 8 Island is a 4.5 mile long barrier island located approximately 9 miles northeast of Wilmington, North Carolina. The private, very exclusive resort island varies in width from 550 to 1,250 feet and is bordered by the Atlantic Ocean on the southeast side and the Middle Sound Channel on the northwest side. Chronic beach erosion has plagued the beachfront on the southern portion of the island. A map of the barrier island is provided in Exhibit 1.

The south ocean beach has experienced enough beach erosion to deem the properties located there endangered. The south sound-side waters have experienced significant shoaling, which has made the Middle Sound Channel nearly impassable by small boats, except at high tide, affecting the boating and water-recreation use by property owners. As a result, many sound-side waterfront property owners have requested that the channel be dredged to remove the shoaling.

Without beach renourishment and dredging channel maintenance, the island will likely suffer serious damage during future storms. Additionally, the increased threat of hurricanes to the Atlantic coastline reinforces the immediate need for action.

Development on Figure 8 Island began in 1965. As of January 1994, the property tax listings noted 568 total properties on the island. Of this total, 271 properties were developed and 297 properties were undeveloped (Table 1). All lots, both developed and undeveloped, are single family residential properties. The majority of homes on the island are vacation residences belonging to affluent and often high-profile people.

All lot owners pay equal annual amounts for required membership in the Homeowners Association. The Homeowners Association does not charge dues based on property development status, property value, or lot size. Homeowner dues are for the purpose of covering the cost of operations, maintenance and capital improvements to the island. No percentage of homeowner dues are reserved to cover environmental contingencies like beach restoration or channel dredging.

The Homeowners Association has a number of subcommittees to assist the Board of Directors in maintaining the welfare of the island community. The Long Range Planning Committee contracted with environmental engineers in October of 1993 to

review the endangered shoreline and shoaling channels threatening the island and to propose a solution.

PLAN FEASIBILITY AND ENVIRONMENTAL ISSUES

A study of the feasibility of channel maintenance and beach restoration was undertaken by consultants, Dr. William Cleary and Dr. Paul Hosier. In May of 1994, Drs. Cleary and Hosier provided an extensive report to the Board of Directors detailing the environmental consequences of undertaking a beach renourishing project.

The report outlined a three-phase process for maintaining the island. Phase I included channel dredging from Middle Sound Channel with relocation of the dredged sand to the southern ocean side of the island. This sand relocation would reestablish the beach width to 1990 conditions. Phase II called for channel maintenance and shoreline nourishment for the northern portion of the island. The sand source for beach replenishment in Phase II would come from the dredging of nearby Rich's Inlet. Phase III proposed continued channel maintenance of the Middle Sound Channel and dune reconstruction in order to further fight erosion.

Phase I, being the most urgent, was presented in great detail by Dr. Cleary and Dr. Hosier. The environmental concerns resulting from the implementation of Phase I included disturbing coastal wetlands, interference with turtle nesting activities, and water quality. In order to avoid degrading wildlife in the wetlands, no dredging or filling would take place in tidal wetlands. To avoid interference with the nesting activities of the endangered loggerhead turtle, no beach renourishment would take place between May 1st and November 15th. Water quality changes resulting from dredging would be addressed through bulldozing a dike. This dike would provide a channel for the water running over

the newly dredged material. Thus the channel will force "dredged" water to enter the ocean at one location instead of entering the ocean over a wide area.

With these stipulations in place, the report concluded that no significant long term changes in wildlife feeding, nesting, or other habitat were expected to occur as a result of the dredging and renourishment activities of Phase I. A detailed analysis of Phases II and III plans were to be addressed upon completion of Phase I.

PHASE I

To implement the beach restoration and channel dredging for the southern part of the island, the island was broken into four districts as indicated in Exhibit 1. District A included all lots on the south oceanside of the island. This district needed immediate beach renourishment to save endangered lots. District B included all lots on the north oceanside of the island. District C included waterfront lots on the south sound side. The sand located in the Middle Sound Channel in front of these lots would be dredged to provide beach sand for District A. District D included lots on the north sound side as well as all inland lots also located at the northern end of the island.

The details of Phase I dredging and beach maintenance follow:

Approximately 550,000 cubic yards of sand will be removed from 5,476 feet of the Middle Sound Channel behind Figure 8 Island using a hydraulic pipeline dredge with beach disposal. Sand removed from Middle Sound Channel will be discharged along a 9,700 foot section of the lots located in District A of the island. The sand will be deposited to provide an equilibrated berm of 55 feet.

Removal of sand will widen the Middle Sound Channel to 300 feet for approximately 3,600 feet along the northern portion of the channel, then widening to 900 feet with an 1,800 foot section nearest Mason's Inlet. The channel will be dredged to a depth varying from 9.7 feet at the south end to 9.3 feet at the northern terminus of the channel.

The cost estimates for this project were between $750,000 and $1,250,000. These estimates assumed that 550,000 cubic yards of sand would be pumped at a cost of between $1.20 and $2.00 per cubic yard and that the administration and contingency cost estimates would be between $90,000 and $150,000.

The homeowners of Figure 8 Island expect to accrue the following benefits from the completion of Phase I:

- 15 developed and undeveloped endangered lots will receive extended lifespan
- Beach renourishment will provide additional time before major dune reconstruction is necessary
- The recreational potential of both the ocean beach and Middle Sound Channel will be enhanced
- The possibility of overwashing and threat of erosion to the single access corridor to the island, Beach Road South, will be reduced
- The damage associated with hurricanes and nor'easters should be reduced.

THE MEETING

Mike Powell, excited about the results of the 8-month long study, looked forward to sharing the news with the property owners of island. Property owners from each district, understanding the long-term interests of the island were at stake, attended a

special meeting called by the Homeowners Association. Property owners were given a proposal on how the cost would be divided upon arrival at the meeting (Tables 2, 3, and 4).

MIKE POWELL (HOMEOWNER ASSOCIATION PRESIDENT):

Welcome everyone to this special meeting of the homeowners of Figure 8 Island. The board of directors is pleased to finally announce that a plan to save the southern part of the island is feasible and has been approved. On behalf of the island, I would like to especially thank Dr. Cleary and Dr. Hosier for their contributions to this extensive project.

The proposed assessment you received as you walked in describes the costs of renourishing the south oceanside beach and dredging the southern portion of the Middle Sound Channel. It is impossible to pinpoint an exact amount, but the project will cost between $750,000 and $1,125,000 to complete.

ROGER McDONALD (ENDANGERED DEVELOPED LOT OWNER):

It looks to me like the owners of endangered properties will bear 10% of the projects actual total cost, in addition to paying a portion of the remaining 90%.

MIKE POWELL:

Roger, that is absolutely right. The Board of Directors is aware that numerous small, privately funded canal dredgings and beach restorations have successfully taken place on the island. Those projects were paid for by the individual property owners. However, given the size of the project at hand, it would not be fair to charge the whole project to the owners of endangered property. As a result, owners of properties in immediate danger will only be directly responsible for a portion of the project costs.

JEFF BAKER (DISTRICT B PROPERTY OWNER):

So the whole island is equally dividing the remaining costs of the project equally?

MIKE POWELL:

As stated in the assessment, all lot owners will pay the same amount to cover the remaining costs of the project. Membership in the Homeowners Association is the same fixed annual amount for all property owners. So, when major projects arise that will affect the good of the island, the Board of Directors feels it should be charged just like homeowner dues.

JIM ALFORD (DISTRICT D, MIDDLE SOUND SIDE):

It looks to me like the dredging of the channel in front of District C is really going to allow better passage for watercrafts in that area and will make their lots much more useable. If it does not do that for me, my benefit is only indirect. Why am I paying the same amount as someone who is directly benefiting from this whole project?

JOHN AIMES (DISTRICT D, INTERIOR LOT):

This project is doing nothing for me, and I'm not paying anything. I receive no direct benefit at all. Listen, everyone takes a risk when they buy an island property. When you pay more for a beachfront property, you get to enjoy the view and the beach. But the trade off is the potential for erosion, and if you can't pay for the upkeep of your own property, you shouldn't live on an island.

MIKE POWELL:

John, having nice beachfront property around you stabilizes the value of your property. Plus, if beachfront property washed away, you'd be next in line for the erosion.

JOHN AIMES:

That may be true, but the value of my home and lot would go up dramatically by assuming a beachfront position. So, by saving endangered lots you're really holding back the value of my property. You should be paying me for decreasing the value of my property!

STEPHANIE MARTYN (DISTRICT C):

I think John is taking this a bit far, but does have a point concerning property values. Reflected in the value of every property on this island are the characteristics for the particular property. Location, development status, and size are all built into the value of the property. Why don't we allocate and assess the costs of this project based on the relative property value of each property on the island? That way a small interior lot would not pay as much as a large beachfront property.

CHRISSY OLSON (DISTRICT A, NOT ENDANGERED):

I think you have a point Stephanie. But I'll do you one better. I know this whole project is really saving the value of my property in the long run. I really feel bad for Roger, and I know that my property would be the next in line if all the endangered properties are abandoned. Believe it or not, we are all receiving benefits from this project. I realize my property will receive more benefit than, say, an interior lot. I think a scheme could be developed to allocate the project costs based on benefits received.

District A could be weighted at 5 times property value when allocating costs. Sand will be moved to provide a 55 foot berm in front of most of the District A properties. These properties are, thus, receiving the largest property value protection and recreational benefit of the project.

District B, on the north coast of the island, could be weighted at twice the property value. This recognizes the fact that beach renourishment programs benefit ocean front property value more than others. Further, a precedent is being set that any future beach renourishment programs of this size will be born proportionately more by ocean front lots.

District C could also be weighted at twice the property value. As a result of this particular project, Middle Sound side waterfront lots will receive improved boat water access and protection of current boating privileges. It is appropriate that these lots bear more cost than non-South Middle Sound access lots.

District D properties could remain weighted at assessed property values. These lots receive indirect benefit from renourishment through maintenance of property values.

JOHN AIMES:

I'm still not paying. All this talk about paying based on future benefits is absurd. How can you talk about future benefits on a barrier island like this? We are subject to hurricanes that could wipe this place out tomorrow. The only valid measure at all is present property value and…

JEFF BAKER:

John, you're so selfish. I think we could all chip in and pay equally…

STEPHANIE MARTYN:

Don't be ridiculous. Our tax assessed property values are set in stone. (Table 5) Let's just use a number we know we can't argue about…

CHRISSY OLSON:

Everyone is acting like this island won't be here tomorrow. There will be future benefits associated with this project. It's the job of the Homeowners Association to preserve this island, right Mike?

MIKE POWELL:

We will have to meet on this issue at another time. Let's schedule another meeting for May 31st. The Board of Directors will try to consider the points you've brought up to find an equitable way to pay for this project.

The Homeowners' Association is struggling with which cost method to use when allocating costs to individual property owners. Their debate centers around which policy is the "fairest" to all parties. Certainly, no true cost allocation is absolutely correct, however, the arguments at the homeowners' meeting addresses a number of alternatives for allocating the project costs.

A basic allocation is proposed by the Homeowners Association. Their proposal allocates cost using the number of lots on the island: Endangered lots are assessed ten-percent for the total estimated cost based on historical precedent with each other lot assessed an equal share of the estimated total cost after the initial direct charge to endangered properties. The results of these calculations are presented in Table 4.

The second allocation, proposed at the meeting, focuses on relative property values. This proposal would allocate cost to individual property owners based on unbiased and straightforward tax assessments of value that are proportional to property market values. The values given in the case reflect district values, and from these district values, an average lot value can be derived. Table 6 provides an example of this allocation scheme for the endangered lots.

The third allocation, also proposed at the meeting, attempts to match cost with benefit. This proposal calls for the cost to be allocated to each lot in proportion to the estimated benefits each lot will realize over time. Weighting factors are proposed in the case to adjust relative sales values to reflect relative benefits received from the dredging and replenishment project.

Assignment Questions

1. What is the average cost to each property owner in Districts A, B, C, and D if costs are allocated based on relative property values as suggested by Ms. Martyn (use the allocation of 10% of the total cost to the endangered lots provided in Table 6).

2. What is the average cost to each property owner in Districts A, B, C, and D if costs are allocated based on relative benefits received as suggested by Ms. Olson (use the allocation of 10% of the total cost to the endangered lots provided in Table 6).

3. Suppose property values for the participants attending the meeting were as follows:

Name	District & Location	Assessed Value
Roger McDonald	Endangered lot, District A	$430,000
Chrissy Olson	Not endangered, District A	270,000
Jeff Baker	District B	370,000
Stephanie Martyn	District C	190,000
Jim Alford	Sound-front lot, District D	212,000
John Aimes	Interior lot, District D	160,000

How much will each of these owners pay using each of the three cost allocation methods?

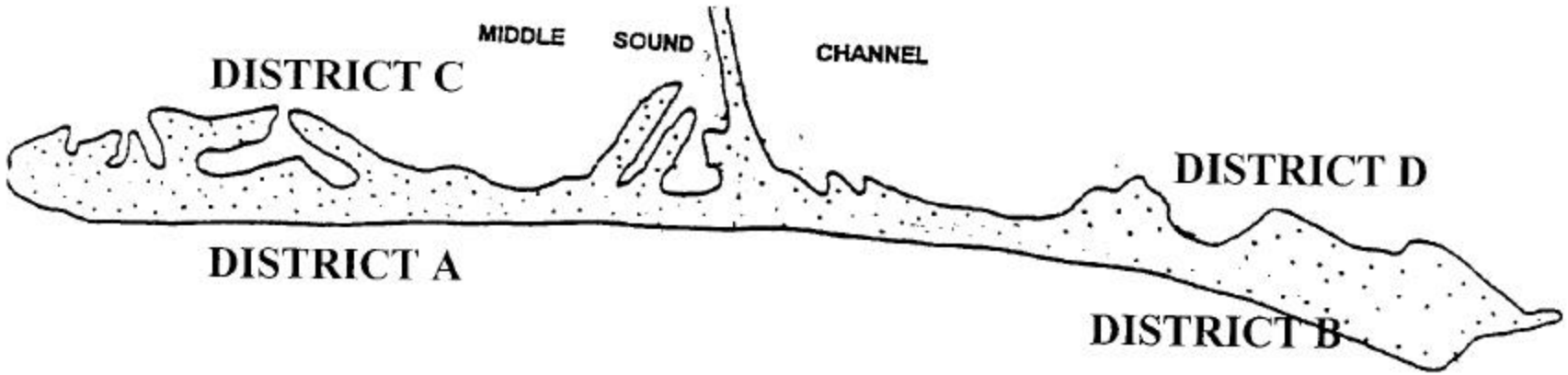
4. Which of the three cost allocations do you believe is the best? Why? Which is the most fair? Why?

5. What does this analysis suggest about the Homeowner Association's policy of charging equal annual dues for each lot? Is this policy equitable? Why or why not? How do annual dues differ from the costs of the dredging and replenishment project?

6. How would you respond to each proposal if you were a property owner?

7. Can you suggest an alternative proposal that would better meet the objectives of a fair allocation to each property owner?

EXHIBIT 1
FIGURE EIGHT ISLAND



ATLANTIC OCEAN

TABLE 1

FIGURE 8 ISLAND PROPERTIES

District	Number of Properties Developed	Undeveloped	Total Properties
A (South oceanside)**	61	42	103
B (North oceanside)	55	70	125
C (South Middle Sound side)	99	98	197
D (North Middle Sound side and interior lots)	56	87	143
	271	297	568

**South oceanside contains 15 endangered properties
Developed Endangered = 8 lots
Undeveloped Endangered = 7 lots

TABLE 2

ALLOCATION OF 10% OF TOTAL COST TO ENDANGERED LOTS

LOW ESTIMATE - $750,000	Developed Lots	Undeveloped Lots	Totals
Total Cost			$750,000
10% Allocation			$75,000
# Endangered Lots	15	8	15
Direct Cost To Each Endangered Lot			$5,000

HIGH ESTIMATE - $1,250,000	Developed Lots	Undeveloped Lots	Totals
Total Cost			$1,250,000
10% Allocation			$125,000
# Endangered Lots	15	8	15
Direct Cost To Each Endangered Lot			$8,333

TABLE 3

REMAINING COST ALLOCATION - BASED ON NUMBER OF LOTS

LOW ESTIMATE
$750,000

	Total # of Lots	Allocation %	Cost to Allocate	Total cost to Each District	Cost Per Lot
District A	103	18.13%	$675,000	$122,403	$1,188
District B	125	22.01%	$675,000	$148,548	$1,188
District C	197	34.68%	$675,000	$234,111	$1,188
District D	143	25.18%	$675,000	$169,938	$1,188
Total	568	100.00%		$675,000	
			Plus Direct Allocation to District A	$75,000	
			TOTAL PROJECT COST	**$750,000**	

HIGH ESTIMATE
$1,250,000

	Total # of Lots	Allocation %	Cost to Allocate	Total cost to Each District	Cost Per Lot
District A	103	18.13%	$1,125,000	$204,005	$1,981
District B	125	22.01%	$1,125,000	$247,579	$1,981
District C	197	34.68%	$1,125,000	$390,185	$1,981
District D	143	25.18%	$1,125,000	$283,231	$1,981
Total	568	100.00%		$1,125,000	
			Plus Direct Allocation to District A	$125,000	
			TOTAL PROJECT COST	**$1,250,000**	

Table 4

SUMMARY OF COSTS TO PROPERTY OWNERS BY DISTRICT

	Average Lot PROJECT COST $750,000 TO $1,250,000	
	$750,000	$1,250,000
DISTRICT A - ENDANGERED	$6,188	$10,314
DISTRICT A	$1,188	$1,981
DISTRICT B	$1,188	$1,981
DISTRICT C	$1,188	$1,981
DISTRICT D	$1,188	$1,981

TABLE 5

FIGURE 8 ISLAND ASSESSED PROPERTY TAX VALUES

	Property Values		
	Developed Lots	Undeveloped Lots	Total Assessed Property Value
District A			
Endangered Lots	$ 2,585,246	$ 1,164,987	$ 3,750,233
Other Lots	17,127,254	5,824,933	22,952,187
Total Value District A	19,712,500	6,989,920	26,702,420
District B	18,909,200	10,805,000	29,714,200
District C	21,122,690	7,463,460	28,586,150
District D	13,831,510	6,635,000	20,466,510
	$ 90,703,154	$ 37,718,313	$ 132,171,700

TABLE 6

ALLOCATION OF 10% OF TOTAL COST TO ENDANGERED LOTS

	Total Lots	Average Developed Lots	Average Undeveloped Lots
Total Property Value District A	$26,702,420	$19,712,500	$6,989,920
# Lots	103	61	42
Average Value Per Lot	$259,247	$323,156	$166,427
# Endangered Lots	15	8	7
Value of Endangered Lots (Table 5)	$3,750,233	$2,585,246	1164987
Average Value Per Endangered Lots	$250,016	$323,156	166427
% Value Per Endangered Lot		68.9%	31.1%
Low Estimate for Allocation	$750,000		
10% of Low Cost Estimate	$75,000		
High Estimate for Allocation	$1,250,000		
10% of High Cost Estimate	$125,000		

Based on Average Value of All Endangered Lots

Low Cost Estimate $750,000: Allocation of $75,000 (10%)	
Cost Allocated As a Percent of Average Endagered Lot Valu	2.00%
Direct Cost To Each Endangered Lot	$5,000
High Cost Estimate $1,250,000: Allocation of $125,000 (10%)	
Cost Allocated As a Percent of Average Endagered Lot Valu	3.33%
Direct Cost To Each Endangered Lot	$8,333

Based on Relative Value of Developed versus Undeveloped Lots

Low Cost Estimate	**Developed Lots**	**Undeveloped Lots**
Allocation of $75,000 Low Project Cost	$51,702	$23,298
Allocation Per Lot	$6,463	$3,328
High Cost Estimate		
Allocation of $125,000 Low Project Cost	$86,170	$38,830
Allocation Per Lot	$10,771	$5,547

CHINA HUANENG GROUP --

Control, Performance Evaluation and Incentive Systems

Thomas W. Lin
Leventhal School of Accounting
University of Southern California
Los Angeles, CA 90089-0441
Tel: (213) 740-4851
Fax: (213) 747-2815
E-mail: wtlin@marshall.usc.edu

Kenneth A. Merchant
Leventhal School of Accounting
University of Southern California
Los Angeles, CA 90089-0441
Tel: (213) 740-4851
Fax: (213) 747-2815
E-mail: kmerchan@marshall.usc.edu

Case presented at the AAA Management Accounting Section Conference at Savannah, Georgia, January 20, 2001

Third Revision, March 2001

We gratefully acknowledge the help from Professors Xiayue Chen and Shengli Du of Tsinghua University, and Wenxin Jia, Huanliang Wang, and Yueguo Liu of China Huaneng Group, and helpful comments from Professor V.G. Narayanan as well as the funding support provided by the Center for International Business Education and Research at the Marshall School of Business, University of Southern California.

CHINA HUANENG GROUP --

Control, Performance Evaluation and Incentive Systems

Abstract

During the past five years, China has focused considerable attention to the reform of its state-owned enterprises. Chinese firms started to realize that they need modern management accounting techniques to provide management with relevant, timely, and accurate information to improve enterprise performance. However, few such findings have been published on the progress Chinese firms have made toward this goal. The purpose of this case is to describe the efforts of one of China's 100 key state-owned enterprises' reforms on its subsidiary company control, performance evaluation and incentive systems, China Huaneng (power-generation) Group.

Introduction

In July of 1999, Ms. Wenxin Jia, Vice Manager of China Huaneng Group's (CHNG) Finance Department, described her company's operating philosophy and systems by the following four principles:

(1) High quality and scale of projects – new project or subsidiary selection or development must be based on the economy of scale and the adoption of the advanced technology.
(2) High speeds in construction – to shorten the construction period while guaranteeing the quality standard.
(3) High level of management – to keep pace with the world's advanced management level.
(4) High efficiency in operation – the overall evaluation criterion for developments and operations.

According to Jia, CHNG's strategy is "Maintaining to make diversified development, with power business as CHNG's core industry."

Industry Information

In the early 1970s, the long-lasting shortage of electric power in China became an important factor that affected and limited the development of the Chinese economy. During the past 20 years, China has experienced a structure reform in its economy as it began to open up to the outside world. During this time, China's power industry has engaged in developmental twists and turns that eventually led to brilliant achievements attracting worldwide attention.

In 1978, China's total installed generating capacity stood at 57.12 million kwh and the electric power output was 256.6 billion kwh, ranking 8th and 7th in the world, respectively. Over the past 20 years, China's power industry has advanced tremendously with an average annual increase of installed capacity of 10 million kwh. By the end of 1997, China's total installed generating capacity and total power output had reached 250 million kwh and 1,105.4 billion kwh respectively, both ranking second in the world, making China one of the nations with the fastest growing power industries.

With the rapid development of China's power industry, Chinese power enterprises began developing in the directions of industrialization, big company groups, and large-scale plants while speeding up the shifting of operational mechanisms. Especially since 1997, the growth rate of China's power industry has been enormous, with the industry's fixed assets and output value growing steadily. According to China's statistics yearbook, 1997 year-end total assets of the industry was RMB 682.24 billion yuan, 31.82% more than the previous year. (Note: U.S. 1$ = RMB 8.27 Yuan)

In output value, statistics show that the industry gained a total of RMB 203.03 billion yuan in 1997, 19.57% more than the previous year; the industrial added value was RMB103.89 billion yuan, up 19.26%; and the sales value was RMB197.58 billion yuan, up15.86%.

Overall, the power industry's major economic growths in China have maintained a steadily growing momentum. In the five years from 1993 to 1997, the industry made RMB116.5 billion yuan in total profits and taxes, of which profits were RMB 36.2 billion yuan and taxes were RMB 80.3 billion yuan.

Exhibit 1 presents China power industry's financial data during 1995-1998.

Exhibit 1

Financial Data of China's Power Industry in 1995-1998

	1995	1996	1997	1998
Output (1 billion kwh)	1,007.0	1,081.3	1,105.4	1,125.2
Sales (1 billion kwh)	662.8	716.3	752.5	760.0
Revenues (RMB 1 billion)	154.4	185.9	249.9	258.2
Taxes (RMB 1 billion)	15.3	17.5	22.3	22.7
Net Income (RMB 1 billion)	7.7	8.0	8.2	8.6

Company Background

China Huaneng Group (CHNG) was established in August 1988. "Hua" means China, while "neng" means energy. It is a large-scale state-owned enterprise with 20,000 employees and headquarters in Beijing. The company's core business is power generation.

In 1991 CHNG was listed among the first batch of experimental large-size groups in China. In 1996, CHNG merged with the State Power Corporation of China. It is a holding company of many power companies; it also has many peripheral businesses in telecommunications, real estate, finance, cement, and electrical appliances. Most are vertically integrated. CHNG reports to the State Power Corporation of China, which is a part of the government. Consequently, this is a true state-owned enterprise.

At present, CHNG consists of its core enterprise (China Huaneng Group Corporation), and nine other member corporations (Huaneng International Power Development Corporation, Huaneng Raw Materials Corporation, China Huaneng Finance Corporation, China Huaneng Technology Development Corporation, Huaneng Comprehensive Utilization Development Corporation, Huaneng Real Estate Development Corporation, Huaneng Industrial Development & Service Corporation, China Huaneng International Trade-Economics Corporation, and Huaneng South Development Corporation) and about 400 subsidiary companies throughout China. In addition, it directly controls about 30 overseas branches and companies.

Only two subsidiaries are publicly held: Huaneng International Power Development Corporation and Shangdong Huaneng Power Development Corporation. Both had their stocks issued on the New York Stock Exchange during the second half of 1994.

CHNG's mission in 1985 was to address the national shortage of power. Now the mission is to increase profits. The government primarily appoints its board of directors. The goal is "slow steady growth in

profits." The Chinese government is not very strict; it doesn't look at how much profits have improved each year. Hence, there are no sanctions by the government if no increase in profit is reported.

Exhibit 2 presents CHNG's Annual Power Generation/Production during 1989-1996. Exhibit 3 shows CHNG's financial statement information for 1995 and 1996. Exhibit 4 displays CHNG's major financial data during 1989-1996.

Exhibit 2

CHNG's Annual Power Generation/Production during 1989-1996
(Unit: 1 billion KWH)

	Power Generation	Percentage of the Country
1989	18.30	3.13%
1990	25.60	4.20
1991	39.38	5.81
1992	52.70	6.99
1993	69.77	8.34
1994	81.60	8.80
1995	93.81	9.32
1996	97.70	9.70

Exhibit 3

CHNG's Recent Two Year Financial Statement Information (Unit: RMB 1,000 yuan)

	1996	1995
Sales Revenues	20,705,540	18,183,350
Cost of Goods Sold	15,740,050	13,591,050
Operation Expenses	130,480	39,960
Administrative Expenses	538,330	488,690
Operating Income	2,293,400	2,028,360
Income Tax	729,470	599,270
Profit before Tax	3,497,700	3,249,850
Total Assets	112,761,330	90,910,650
Current Assets	33,416,340	26,312,540
Accounts Receivable	10,565,720	8,076,000
Inventories	2,932,510	1,865,470
Long-term Investment	5,095,010	5,627,810
Fixed Assets	34,742,330	32,407,040
Projects in Construction	27,974,070	19,044,040
Total Liabilities	82,707,660	63,290,520
Current Liabilities	26,040,720	18,380,360
Long-term Liabilities	56,666,940	44,910,160
Minority Interest	17,269,390	15,761,220
Capital Stock	4,026,810	4,026,810
Stockholders' Equity	30,053,670	27,620,130

Exhibit 4

CHNG's Major Financial Data During 1989-1996
(Unit: RMB 1 billion yuan)

	Total Assets	Stockholders' Equity	Profit before Tax	
1989	11.79	1.99	0.27	
1990	27.61	2.72	0.35	
1991	34.13	3.77	0.66	
1992	39.91	4.91	1.03	
1993	46.07	6.75	1.83	
1994	80.13	24.16	2.17	
1995	90.91		27.62	3.24
1996	112.76		30.05	3.49

Control of Subsidiaries

CHNG has adopted a decentralization philosophy since its establishment. Through its decentralized subsidiary company operations, CHNG enhanced its Performance Evaluation System by continuously adding value to state assets.

CHNG's investments in subsidiary companies are usually in the form of joint ventures with local enterprises. According to the capital structure relationship, CHNG is divided into three levels: core enterprise, member companies, and operating units. Recently, CHNG became the wholly owned subsidiary of State Power Corporation of China, which was established in 1997. The specialized member corporations in different areas are 100% subsidiaries of CHNG. Some of CHNG's core enterprise and member companies also invested in some operating units. The first level of CHNG's core enterprise is its decision-making and management center (i.e., the parent company). Member companies (i.e., one type of subsidiary companies) comprise the second level, and are in charge of the management of operating units as well as making investment decisions. Operating units (i.e., another type of subsidiary companies) constitute the third level. They solely concentrate on business operations instead of making investments.

In periods of a heated economy in the 1980s, CHNG had a fourth level and a fifth level. However, after years of reorganization and improvement, it now has three levels. CHNG uses the equity method to record its investments; it also prepares consolidated financial statements. Member companies manage their investments and have the right to make decisions according to the shareholder's structure. They also implement the management principles of the core enterprise. Previously, the core enterprise considered giving up its close control of its subsidiaries to control through two financial statements (Balance Sheet and Income Statement) and one person (the general manager). Later, they found that this kind of "after the fact" control was highly risky because of the irreversible loss incurred by incorrect decisions. Presently, CHNG maintains both flexibility and necessary control over its subsidiaries.

The parent company and subsidiaries in CHNG are connected by the capital relationship between them. Subsidiary companies are highly autonomous. Meanwhile, the parent company maintains control in three areas:

1. Personnel Control

    - hiring of managers.

    - total annual compensation (salaries plus bonuses).

    - number of positions in each function in each company.

2. Investment Money Control (fixed assets and cash)

    - Investment. Any new investment (> RMB 30 million yuan in large company; > RMB 5 million yuan in small company) must be approved by the parent company.

    - Financing. The government (State Planning Commission) will fund large projects. The parent company also acts as the guarantor of other loans, but sets upper limits. It's difficult to borrow money without the parent company guarantee. China lacks a good credit rating system.

3. Financial Performance Control

    Each year financial performance targets are set as last year's actual results. Three areas of financial performances are: (a) profit, (b) net worth, and (c) cash flow from operations (after capital charge on capital invested).

    In general, it is very rare for a company to fail to achieve its financial targets. Typically, a desired ROE is 15%. However, it is lower (10%) for power generation businesses because the Chinese government often sets the price of electricity. Some businesses desired ROE is much higher than 15% (e.g., financial services, trading companies), even as high as 100%.

    CHNG uses the same planning forms across all of its subsidiary companies. However, some of its accounting systems are different because its subsidiaries are in different businesses.

Performance Evaluation System of CHNG

History of CHNG's Performance Evaluation System

CHNG's Performance Evaluation System underwent three stages:

Stage One: Objective System (1989-1991).

In this stage, most of the projects are still in the construction period. Material working units and some other absolute indicators are evaluated under this system. These indicators include Major Product Production Units, Percentage of Completion, Profit, Loans Repayment and Administration Expenses. The major weakness of this system is the rush investment made without evaluating the outcome, and all the subsidiaries were keen on making investments.

Stage Two: Contracting-Based Managerial Responsibility System (1992-1996).

Since 1992, CHNG entered into a contract with the State Finance Department that it would increase the remitted profit 10% every year. The State would compensate CHNG the shortage of profit if not enough, and CHNG could keep part of any extra profit if the actual profit was greater than the contracted profit. CHNG also tied employee compensation to its performance evaluation system. Under this system, CHNG began to focus on profit and divided the authority and responsibility between different units. However, this focus on profit caused harmful battles among units for projects, loans, and scales. Meanwhile, there turned out to be huge differences in the subsidiary companies' increases in assets, debts, or profits. This sparked CHNG's top management to consider how to thoroughly evaluate the efficiency of its management and units instead of only focusing on its short-term profit. As a result, the concept of a Contract-Based Managerial Responsibility System was introduced in 1994. Relative figures reflecting efficiency such as Return on Equity and Increase in Equity were added. In addition, Repayment of Core Enterprise Loans and Profits Remitted were added to the system since they were relevant to the overall profit of CHNG. Later, the top management found the following problems: First, the uniform standards or criteria were not adequate due to the different levels of profitability between different industries. Second, the contracting system did not consider the control and supervision over the process.

Stage Three: Performance Evaluation System (Since 1997).

In order to focus on the efficiency of investments and consider the differences among different industries, CHNG changed the Contracting-Based System to the Performance Evaluation System in 1997. It also adjusted the evaluating indicators to reflect both efficiency and process controls. In this system, Return on Equity, Increase in Equity, and other ratios are used. Meanwhile, in order to reflect the risks of debts and the ability to pay back its debts as well as to change the existing high Debt Ratio in CHNG, it replaced the Increase in Equity with the Return on Total Assets. With the deepening reform, CHNG's power generation subsidiaries became independent and autonomous. The new system also pays attention to the production process. Indicators such as Output, Profit, Loans Repayment, and Securities are used to evaluate the performance in accordance with the character of its operation. For those branches majoring in the management of power corporations, indicators such as Output and Return on Capital are used. In other words, evaluation is conducted separately between power generation subsidiaries, non-power generation subsidiaries, and branches.

In summary, CHNG has three major developing stages of its Control and Performance Evaluation System: First, it transferred from focusing on absolute values to focusing on relative values in order to compare the efficiency levels among subsidiary companies. Second, evaluation standards were changed from the planned figures for each subsidiary company to the average figure of all subsidiary companies in order to minimize the negotiation between both sides of evaluating institutions. Third, it changed the focus from the evaluation of business operations to the evaluation of investors' managerial controls over investments.

Performance evaluation criteria for power generation subsidiary companies (factories):

Starting from 1997, CHNG's parent company has used the following four criteria to evaluate the annual performance of power generation companies: (1) actual vs. planned power production units (in KWH), (2) actual vs. budget profit, (3) actual vs. planned monthly loan repayment and interest payment amount, and (4) factory security.

The power production criterion has a basic score of 40 points. For any 1% deviation between the actual and the planned production, it adds or deducts 1 point up to a maximum of 20 additional or deductible points.

The profit criterion has a basic score of 10 points. For any 1% deviation between the actual and the budget profit, it adds or deducts 0.5 points up to a maximum of 10 additional or deductible points.

The financing criterion has a basic score of 50 points. For any 1% late payment, it deducts 1 point up to a maximum of 20 deductible points.

There are no points assigned to the factory security criterion. However, CHNG will deduct from the subsidiary company's total wages and salaries: (1) RMB 500,000 yuan if an enormous accident occurs; (2) RMB 100,000 yuan if a major accident occurs; and (3) RMB 50,000 yuan for any employee death during working hours.

The maximum, standard, and minimum scores for meeting all four criteria are 150, 100, and 50 points, respectively.

Exhibit 5 shows CHNG's Performance Indicators for its power generation subsidiary companies.

Exhibit 5

Performance Indicators for Power Generation Companies

Company Name: Unit: 1,000RMB

Performance Indicator	1998 Planned	1998 Actual	1999 Forecast	Comments
Profit	xxxxx	xxxx	xxxxx	
Output	xxxxx	xxxxx	xxxxx	
Loan Repayment	xxxx	xxxx	xxxx	
Cost per Unit	xx	xx	xx	

Note: Cost per Unit was not evaluated in 1998.

Performance evaluation criteria for non-power generation subsidiary companies:

Since 1997, CHNG's parent company has used the following four criteria to evaluate the annual performance of non-power generation subsidiary companies: (1) actual vs. planned return on stockholders' equity, (2) actual vs. standard return on total assets, (3) actual vs. planned monthly loan repayment and interest payment amount, and (4) actual vs. planned capital charge payment amount.

For the return on stockholders' equity (ROE) criterion, the numerator is the net income after taxes while the denominator is the average stockholders' equity. The basic score of this criterion is 60 points. If the actual ROE is greater than the planned ROE, it adds 1 point for every 0.5% increase up to a maximum of 20 additional points. If the actual ROE is smaller than the planned ROE, it deducts 1.5 points for every 0.5% decrease up to a maximum of 20 deductible points.

For the return on total assets (ROA) criterion, the numerator is the income earnings before interest and taxes (EBIT) while the denominator is the average total assets. The basic score of this criterion is 40 points. The standard ROA considers the bank loan interest rate and CHNG's financial condition. If the actual ROA is greater than the standard ROA, it adds 1 point for every 0.5% increase up to a maximum of 10 addition points. If the actual ROA is smaller than the standard ROA, it deducts 1 point for every 0.5% decrease up to a maximum of 10 deductible points.

The financing criterion has no basic points. Instead, it depends on CHNG's internal loan contracts. For any late payment amount less than 20%, it deducts 5 points; if the late payment

amount is greater than 20%, it deducts an additional 1-point for any 20% amount, up to a maximum of 10 deductible points.

For the capital charge payment criterion, every subsidiary company has to pay 8% of the capital amount invested in the parent company by July 1. For any late payment amount less than 20%, it deducts 5 points; if the late payment amount is greater than 20%, it deducts an additional 1-point for any 20% amount, up to a maximum of 10 deductible points.

The maximum, standard, and minimum scores for meeting all four criteria are 130, 100, and 50 points, respectively.

Exhibit 6 presents CHNG's Performance Indicators for its non-power generation subsidiary companies.

Exhibit 6

Performance Indicators for Non-power Companies

Company Name: Unit: 1,000 RMB

Performance Indicator	1998 Planned	1998 Actual	1999 Estimated	Comments
Profit and Taxes				
Net Profit				
Beginning Net Equity				
Ending Net Equity				
Return on Net Equity				
Beginning Total Assets				
Ending Total Assets				
Interest Expense				
Return on Total Assets				
Loan Repayment to core enterprise				
Including: Capital				
Interest				
Balance of Loan				
Profit Remitted				
Including: Last Year Remitted				
This first half year				

Additional Information:

1. Deferred Assets RMB
   including: Pre-operation costs RMB
2. Accounts Receivables with more than three years history RMB
3. Prepaid Expenses RMB
4. Unrecognized Loss in Assets RMB
5. Long term investments RMB
   Including those has no return for three consecutive years RMB
6. Return on Investments RMB

Notes:

1. Numbers are from the Headquarter's Financial Statement.
2. Unrecognized Losses in Assets include both Current Assets and Fixed Assets.
3. Return from Investments refers to dividend income and the share of earnings recorded under Equity Method.
4. Interest Expense refers to Interest Payable minus Interest Income.

Incentive Systems

CHNG's total annual subsidiary company bonus amount ties directly to the performance evaluation of the four criteria described in the above section. If a company obtains a performance score of 100 points, the total company bonus amount will be 50% of the total company's wages and salaries. For every performance point over 100 points, it adds 0.5% of the total company's wages and salaries to the bonus amount. On the other hand, for every performance point less than 100 points, it deducts 0.5% of the total company's wages and salaries from the bonus amount. According to the current formula, the maximum bonus amount for a subsidiary company is 65% of the total company's wages and salaries.

The calculation above creates a company-wide bonus pool. The allocation of this bonus pool to individuals depends on the individuals' organization level and their performance ratings. Each organization level is given a number of points. Some examples are 4 points for the high-level managers, 3 points for the middle managers, and 2.3 points for supervisors. Dividing the bonus pool by the points of all the people eligible for bonuses gives a bonus potential per point.

In addition, superiors, peers, and subordinates give performance ratings of their department employees in four performance areas (with weightings shown in parentheses):

Ethics (20%)
Effort (20%)
Capability (20%)
Performance (40%)

The superior's ratings are given the highest weight (50%); peers are given 30% weight; subordinates' ratings are worth 20%.

There is a guideline for calculating each subsidiary company general manager's bonus: (1) For companies doing very well on all four criteria, the general manager's bonus will be 2.5 to 2.8 times greater than the average company employee's bonus amount; (2) For companies meeting all four criteria as planned or in standard amounts, the general manager's bonus will be 2.0 to 2.5 times greater than the average company employee's bonus amount; (3) For companies that have not met the four criteria but still have profit, the general manager's bonus will be 1.5 to 2.0 times of the average company employee's bonus amount; and (4) For companies with no profit, the general manager's bonus should not be greater than the average company employee's bonus amount.

The annual compensation increases for each employee are paid out 65% as increases in monthly salary and 35% as one-time bonus.

The largest bonus paid in 1997 was RMB 30,000 yuan. This is not a large bonus amount, but employees feel comfortable with the bonus system because their jobs are stable while other industries are facing layoffs.

According to Senior Accountant, Huanliang Wang, "The system does not motivate people significantly. The bonus amount is so small. But the performance evaluation system is transparent and fair with the individual employee performance evaluations."

Positive Effects of the CHNG's Control, Performance Evaluation and Incentive System

CHNG's Senior Accountant, Yueguo Liu collected feedback information from top management, and identified the following positive effects of the control system implemented:

1. Performance indicators have influenced the operating behaviors of subsidiary companies. Especially such relative figures as Return on Assets and Return on Equity have helped subsidiary companies to focus more on financial outcome performance and to understand the concept of risk.

2. The objective performance evaluation results showed different performance levels among subsidiary companies. Take the evaluation results of 1997 as an example; four categories exist in non-power generation subsidiary companies. In the first category, the highest score is 106.1. In the last category, the lowest score was only 50. For power generation subsidiary companies, three categories exist with the highest score of 114 and the lowest 99. Performance differences were found although they were not very obvious. For Branches and Offices, the highest score was 121.5 and the lowest, 98.5, in three categories. These numbers help top management to objectively evaluate the performance of different subsidiary companies.

3. The ties between the performance evaluation results and the compensation have encouraged and motivated employees and managers. According to the system, the amount of the total annual bonus pool, which is the resource of the annual bonus of each subsidiary company, is determined by the evaluation criteria. The actual bonus paid to each subsidiary company is decided by the parent company based on the results of each specific company's performance evaluation. At the same time, employees and managers' bonus are also determined by the evaluation results. This incentive system motivates employees and pushes subsidiary companies' business forward. The only constraint is that any increase in the total compensation amount should not exceed any increase in the subsidiary company's profit.

4. The performance evaluation system provides an objective standard to evaluate subsidiary company managers. According to the evaluating system for managers, CHNG has four categories of ratings: Ethics, Effort, Capability, and Performance to evaluate and appoint managers. The Performance criterion has the biggest weighting percentage. The results of a specific subsidiary company's performance evaluation are also an important criterion for assessing the competence of its managers.

5. The overall control, performance evaluation and incentive system improved CHNG's managing style and system for the whole group. CHNG's inner management system is established on the basis of investment capital control. The evaluation results are the basis of exercising the shareholders' rights of making decisions, selecting managers, and enjoying the earnings. The set of evaluating criteria is to standardize the entire companies' behaviors. In order to make evaluating criteria better reflect the subsidiary companies' operating conditions, CHNG's top management also decided to standardize and improve all subsidiary companies' financial management and assets management. For example, Equity Method is used in its long-term investments; interest payable is recorded as Financial Expenses; estimated or unrealized gains or losses should not be included in a subsidiary company's Income Statement as realized profits or losses; and bad debt expenses must be recognized.

Required:

Read the China Huaneng Group (CHNG) case carefully and answer the following five questions:

1. Briefly describe the China Huaneng Group.

2. Describe and evaluate strengths and weaknesses of CHNG's Control of Subsidiaries.

3. Describe and evaluate strengths and weaknesses of CHNG's current Performance Evaluation System.

4. Describe and evaluate strengths and weaknesses of CHNG's current Incentive System.

5. What changes, if any, would you propose with respect to CHNG's existing: (1) Control of Subsidiaries, (2) Performance Evaluation System, and (3) Incentive System?
   For each change that you propose, explain what problem it is designed to resolve.

University of Baltimore, Merrick School of Business

THE BALANCED SCORECARD AT COLA

In mid July 2000, Douglas Beigel, Chief Operating Officer of COLA was considering the need for full implementation of a new performance management system at his organization:

> Now we really need to focus our attention on strategic issues. The market for our main product, laboratory accreditation, is quickly shrinking so we need to increase our efforts towards further diversification. To guide those efforts we have started working on developing a Balanced Scorecard (BSC) for performance management. We expect the BSC to help us monitor our current performance and make informed decisions about which opportunities are worth pursuing in the near future. While I'm happy with the work we've done so far in thinking strategically, we still have a long way to go. I'd like to use the BSC as a tool to encourage our management team to spend more time on strategic issues and less on operating, day-to-day issues. In our fast-changing healthcare environment, we like to say that the C in COLA stands for change. We are a unique organization with a track record of quality improvement results. We need to take advantage of this unique position to grow our business and focus our resources on value-added products. Increases in sales and continued diversification are clearly important business objectives.

COLA'S BACKGROUND AND PRODUCT LINES

COLA was founded as the Commission on Office Laboratory Accreditation in 1988 by the American Academy of Family Physicians (AAFP), the American Medical Association (AMA), the American Society of Internal Medicine (ASIM), and the College of American Pathologists (CAP). In the 1990s COLA expanded its services beyond laboratory accreditation to offer practice site and educational services to healthcare professionals. Established as a nonprofit organization, it gained a reputation for its programs dedicated to promote quality in the healthcare industry. Its board of directors was formed by practicing physicians representing the AAFP, AMA, ASIM, and other national medical associations.

Associate Professor Lourdes F. White and Graduate Assistant Neslihan Tuncbilek wrote this case as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

Dr. J. Stephen Kroger was the first president elected to serve on the COLA Board of Directors and continued to serve as the Chief Executive Officer. COLA was endorsed by 29 national and state medical organizations. It operated from two offices: the headquarters office in Columbia, Maryland (a suburban town halfway between Washington, D.C. and Baltimore) where the COO and the five divisions were located; and one office in Denver,Colorado, where the CEO and part of the technical staff were located. **Exhibit 1** shows that the organizational structure included four operating divisions and one administrative division. Each division was organized into departments in charge of specific functions. For example, the corporate communications & marketing division included four departments: sales, communications, marketing, and the Information Resource Center. The operations division included internet-based products, human resources, production, education, training, and information systems.

COLA served over 7,500 physician practices across the US including eight of the largest health maintenance organizations (HMOs) in the country. By June 30, 2000, revenues exceeded US$6 million. **Exhibit 2** shows summary financial information for the period 1989-2000. Unlike other private nonprofit organizations that relied on charitable contributions, all revenues at COLA were fee-based or derived from grants. Out of a total number of 75 full-time employees, the technical staff included 16 full-time surveyors. In addition, up to 35 part-time surveyors performed site visits to clients from locations throughout the US. Surveyors often operated from their home offices in coordination with COLA's staff at headquarters. Approximately half of the surveyors were located in Maryland, and the other half was spread in seven states across the country.

COLA offered services in three main product groups: laboratory accreditation, practice site services, and educational resources. Additional information about COLA is available at its website at http://www.cola.org.

Laboratory Accreditation

One of COLA's first and most successful programs was laboratory accreditation. Prompted by the Health Care Financing Administration (HCFA) and federal regulations in the form of the Clinical Laboratory Improvement Amendments of 1988 (CLIA), laboratories were struggling in the late1980s to meet the various quality requirements set forth by both federal and state regulators. COLA developed a voluntary accreditation program with an emphasis on educational services to help laboratory professionals meet federal and state requirements while also improving quality of care. In June 1997 the Joint Commission on Accreditation of Healthcare Organizations (the "Joint Commission" or JCAHO) formally recognized COLA's laboratory accreditation program so that by participating in this program laboratories were also deemed to be in conformance with the Joint Commission specifications.

All laboratories in the US were required to obtain a certificate of approval from HCFA. That was the only requirement for laboratories that specialized in simple tests such as over-the-counter tests or tests that did not have to follow specific standards (thus called "waived tests"). Laboratories that performed moderate to high complexity tests had the additional requirement of being surveyed regularly by HCFA, a state representative or another accrediting organization. States could decide to become exempt from federal regulations and establish state regulations and inspection agencies of their own. During the 1990s COLA's accreditation business grew quickly as an increasing number of laboratories chose COLA instead of federal or state inspection agents to help them fulfill quality requirements.

COLA surveyors were typically medical technologists with a minimum of six years of experience. Upon joining the company, surveyors underwent a five-week technical training program covering the 299 questions on basic quality standards and about 100 questions on specialized standards that were part of the HCFA and CLIA requirements for laboratories. The training also covered COLA's procedures for using the computerized laptop templates, instructions on how to send information to the home office, and customer service issues such as interpersonal skills to meet customer needs.

The process for laboratory accreditation started with a contract between the laboratory and COLA. The client then received a Laboratory Accreditation Manual with the survey criteria that COLA surveyors would follow during the visit to the client site. Many COLA clients appreciated receiving all of the survey criteria ahead of time, and used them as a self-assessment tool prior to the surveyors' visit.

In some cases representatives from a government agency would appear unannounced at client sites while COLA was surveying a laboratory to verify that COLA's procedures were in agreement with what the regulators had intended. The scheduled on-site survey was always followed by an "exit briefing" when COLA surveyors gave the client a thorough review of which areas were considered to meet or exceed the regulatory standards, and which areas needed improvement. COLA agreed with the client about deadlines for correction of each of the problem areas. This agreement would be the basis for the Plan for Required Improvement which the client had to meet before receiving the accreditation certificate. The client could access COLA's toll-free Information Resource Center (IRC) which was staffed by medical technologists regarding any questions about COLA's survey process, CLIA standards and quality laboratory practices. Clients received several educational materials, such as a two-year subscription to COLA's bimonthly newsletter, copies of CLIA Fact Sheets and COLA Fast Facts by fax, to assist them with step-by-step improvements.

COLA promised a one-week turnaround for reporting survey results. After completing the site report, the surveyor would send the information to COLA's accreditation division electronically. Both the survey and accreditation divisions kept detailed information on time spent during site visits and total turnaround time for the accreditation to be completed. Based on past experience, a typical physician office laboratory would require 4 hours to be surveyed; a large clinic would require 8 hours, while a community hospital laboratory would require 12 hours. Once the surveyor completed the report, the accreditation division could usually issue the accreditation certificate within three business days after reviewing all the relevant information from the surveyor and comparing it with the regulations that applied to a particular laboratory. The electronic exchange of information among surveyors, the survey division staff and the accreditation division made it possible to achieve the turnaround targets.

When the laboratory had completed the program, COLA would issue a certificate stating that it had met CLIA, HCFA or other state requirements. "Elite" certificates were reserved for laboratories that exceeded quality requirements. Laboratories were required to renew their accreditation every two years.

COLA was considered one of the "big three" accrediting organizations. It had originally specialized in physician office laboratories (POLs), while JCAHO and the College of American Pathologists (CAP) specialized in accrediting larger hospital laboratories. In recent years, the lines separating those market segments had been blurring, and COLA had added large hospital laboratories as clients, while some POLs had been accredited by JCAHO and CAP. Other competitors included HCFA and state agencies. COLA officials estimated that there were about 7,000 physician office laboratories enrolled in COLA's accreditation program, controlling about 50% of the national POL market for accreditation, after excluding laboratories with low

annual test volumes, and laboratories performing specialized tests that COLA could not accredit. At the regional level, COLA's market shares ranged from 31% in the West to about 57% in the Midwest.

In the laboratory accreditation business, COLA was perceived as having competitive prices. Accreditation fees were based on standard hours required for the survey visit and accreditation review, plus a variable fee based on number of specialized tests the laboratory performed (e.g., hematological tests). Laboratories with annual test volumes below 2000 generally felt that COLA's accreditation program was not cost effective. Therefore, COLA had not targeted low-volume laboratories as prospective clients.

The market for laboratory accreditation was undergoing significant changes in 2000. About 50% of all physician office laboratories (POLs) in the US in operation in the 1990s were closed or about to close in 2000. The overall laboratory market for accreditation was believed to be shrinking 5% per year. The two most frequently cited reasons for closings were that reimbursement rates from insurers were declining, while costs associated with government licensing and regulatory standards were increasing. The trend was that large laboratory networks would dominate the market. For example, when one healthcare organization acquired six local laboratories, it became cheaper to have each laboratory send its samples to be processed in a central location than to have every laboratory meet the regulatory standards and other costs associated with complex tests. On the other hand, concerns with patient safety and outsourcing costs had led several physician practices to increase the number of laboratory tests performed right at the physician's office laboratory, to facilitate quicker, more efficient and accurate diagnosis. This latter trend could potentially offer additional opportunities for COLA to expand its laboratory accreditation services.

Practice Site Services

In the 1990s medical practices received increasing pressure to demonstrate quality of care and accountability. In 1991 a nonprofit organization called the National Committee for Quality Assurance (NCQA) began accrediting managed care organizations (MCOs) to help purchasers and consumers of managed healthcare select plans based on quality and value, instead of price and provider network only. In the following years the NCQA also accredited managed behavioral healthcare organizations (MBHOs), credentials verification organizations (CVOs) and physician organizations (POs). Almost half of US health managed care organizations (HMOs) covering about 75% of all HMO participants were involved in NCQA's voluntary accreditation program. More information about NCQA appears at its website at http://www.ncqa.org.

COLA assisted in this accreditation process by working in partnership with HMOs, MBHOs or POs to complete site surveys and review medical records in order to help them meet NCQA and state quality requirements. In this capacity COLA acted as a delegate to the MCOs and other medical practices while ensuring that NCQA's accreditation requirements were met. COLA's practice site services included Ambulatory Medical Record Reviews, Health Plan Employer Data and Information Set (HEDIS) Reviews, Medicaid Chart and Site Reviews, Credentialing Site Reviews, Disease Management Record Reviews, and Medical Practice Achievement (MPA) programs. COLA's goal in all these services was to evaluate the health plan's clinical as well as its administrative systems.

After signing a contract with an HMO, COLA would perform site and medical record reviews for physicians in the HMO's network. These services were necessary when a new provider first joined the HMO's network, as well as when the HMO or the state required the physician office to be recredentialed.

Before 2000, COLA's credentialing team would visit a physician's office every two years, but recently some states had relaxed those requirements, and let the HMO determine the frequency of the site visits. During the visit, COLA would review the work of a credentialing organization regarding the accuracy of the educational and professional credentials of the medical staff, and perform a detailed review of the facility. COLA would check, for example, if access for handicapped people was adequate, if sufficient lighting was available, if medical record entries were properly maintained, or if certain procedures were followed to ensure patient safety, preserve confidentiality and reduce medical errors. COLA also investigated issues related to preventive health required by NCQA's health performance measurement tool named HEDIS. By the year 2000, HEDIS included a set of 50 standardized performance measures used to evaluate and compare health plans. In accordance with HEDIS, COLA reviewed information from physician offices on issues such as immunization rates, cholesterol management and member satisfaction.

Physicians received information from COLA office guides to help them implement NCQA standards and technical assistance in correcting problem areas. Both the HMO and the physicians received a copy of COLA's report at the end of the site visits, including recommendations for improvement.

With some organizations, COLA's goal to improve quality of care was less than welcome. These organizations viewed the accreditation process as a necessary cost of doing business, but were not particularly interested in implementing quality improvement programs voluntarily. Jerry Weiss recalled one example:

> COLA was negotiating with a very large HMO to do practice site services. We described the process that COLA employed for site visits, which included an exit briefing during which deficiencies would be discussed. The reviewer would make recommendations for improvements before departing. The client simply said they wanted to know only about the areas that weren't working, and that *they* would educate their physicians. I recommended to Doug Beigel that we should not pursue this contract, because the HMO's expectations were so different from COLA's way of doing business that they could actually harm COLA's relationships with some long-standing clients. For example, what if the results of the site visit were used by the HMO to disqualify a physician office from the HMO's network of providers, and that office also had a lab that is enrolled in our laboratory accreditation program? Then we'd likely lose not only the physician office as a practice site client, but would also lose a long-time customer for laboratory reaccreditation.

But experts forecasted that consumers and employers would continue to require quality healthcare in the future. A major study released by the American Medical Association in Spring 2000 reported on pervasive medical errors threatening patient safety in hospitals and alerted to the growing need for better monitoring and quality improvement efforts. The demand for those services was expected to be a growing area in the healthcare industry in the 2000-2005 period. For example, there was an increasing number of large employers (including the federal government) that required NCQA accreditation of the health plans they would offer to their employees.

In the practice site business, COLA adopted a policy of "cost plus pricing" based on the specialized services each site required. Prices for medical practice achievement services, for example, were based on an estimate of the direct cost of delivering the service, plus an allowance for possible cost overruns, and a percent profit markup. Prices for practice site services were not cheap, but clients in this business tended not to negotiate prices, as they were usually facing tight deadlines by the time that they contacted COLA.

Competition in the practice site business could come from local nurses who provided those services on behalf of a state regulatory agency, from an HMO that routinely performed those services in-house, or from other accrediting organizations such as Aperture. Physician offices or HMOs could also become competitors when they decided to discontinue outsourcing and began performing their own practice site services.

A new customer for practice site services would often approach COLA after it had been unhappy with in-house services or with other accrediting organizations. It was difficult to assess COLA's market share for this type of service, given the predominance of in-house services provided by the HMO themselves. But COLA estimated that its market share of practice site services was still relatively small. Some managers attributed this limited share of the market to a lack of customer focus. When MPA was first introduced, for example, COLA had little knowledge of which particular services MPA customers really needed. It was only when those needs were addressed that the product started selling.

Educational Resources

Educational resources had always been particularly important for supporting COLA's accreditation businesss, giving COLA a competitive advantage over HCFA and state regulators (if the state required accreditation) that offered only accreditation services. Educational products were perceived by clients to add more value to laboratory services than to physician practices.

COLA's Information Resource Center (IRC) was staffed by medical technologists to provide toll-free technical support on any issue related to laboratory practices, including questions not directly related to COLA. Telephone access was also provided to customer service representatives. Access to the IRC was open to both accreditation clients and any other medical organization. In addition, the IRC processed orders for COLA's educational publications. COLA prepared, published and distributed guides for laboratory quality assurance and manuals with detailed instructions on how to perform various laboratory procedures accurately. Those guides and phone consultations with the IRC allowed laboratory technicians who sometimes had only a high school education to improve laboratory practices. More recently, COLA started selling educational products such as COLA Lab Facts and CLIA Facts for Laboratories also to customers that did not participate in COLA's accreditation programs. Accreditation customers received a 15% discount off of COLA's educational materials. Those materials were soon to be made available for purchase from COLA's internet site. Some publications, such as COLA Fast Facts were already available for free online, provided the customer offered some contact information.

Given the trends towards waived testing and POLs' closings, COLA had been searching for alternative educational or consulting products that it could offer to its laboratory clients. Robert French, manager of the accreditation division, remarked:

> If a lab only does waived tests and is therefore trying to reduce costs, what can COLA offer that labs would be willing to pay for? It's like trying to sell warranty for a piece of equipment that doesn't break. We have to be creative and come up with products that truly add value.

COLA was in the process of developing internet-based distance learning programs to be offered to laboratory professionals. These programs, once recognized by professional organizations, would offer

continuing education credits that could lead to increased demand for other educational programs. COLA expected to market educational products as a third product line instead of offering educational support only to accreditation clients.

COLA's educational programs also included a Speakers Bureau consisting of professional speakers with specializations in fields ranging from health-related legislation to quality assurance and control. Professional organizations would hire one of COLA's speakers to deliver educational presentations during conferences, seminars or other professional events. Speakers were selected based on their area of expertise and organizational level, including members of COLA's Board of Directors, management team and staff.

CORPORATE MISSION, VISION, VALUES AND STRATEGY

As the organization grew in the 1990s, COLA's mission and vision evolved with an emphasis on patient care and education (see mission and vision statements in **Exhibit 3**). In 1995 COLA engaged in a two-year effort to articulate, communicate and implement a set of values throughout the organization. The resulting list of core values (see **Exhibit 3**) highlighted the importance given to teamwork. "Teaming," as the value became known by all employees, permeated every aspect of the organization. By the year 2000 employees had learned to use a "teaming" vocabulary and to follow "teaming" ground rules to make business decisions and resolve conflicts.

In the context of those values, strategic planning went from an activity that involved only Kroger and Beigel, to an effort that also required participation from the divisional managers. COLA's mission and vision were reflected in its strategy to cater to physician needs, coupled with an emphasis on educational services. This strategy had allowed the company to differentiate its programs so that it did not need to compete on the basis of price alone. Beigel reflected on how COLA differentiated itself from its competition:

> COLA is physician-directed, physician-friendly. We have a straightforward way of dealing with customers. We help healthcare professionals understand how the generic requirements set by regulators translate into practical standards for their particular business. We then show the healthcare professional how to achieve those standards, and we work with clients until they can successfully achieve those standards. It used to be that accreditation was viewed as "gotcha!" ("got you!") Some of our competitors still think this way. But nowadays customers want a much more "consulting-oriented" approach. That's where we truly exceed expectations. Our programs were developed by physicians, for physicians. In all our services we perform the roles of educators and partners. Sometimes these roles are in conflict with the "auditor" role. But like in public accounting, if we manage the customer relationship well, it won't become a problem. It's an opportunity instead. We have developed a solid reputation for being physician-friendly. While preserving this reputation with all of our constituencies, we have an opportunity to constantly ensure that standards are not relaxed, and we continue to push for better quality care.

Despite the impetus for strategic planning since the beginning of COLA, divisional managers found it difficult to devote the time necessary to think strategically. The organization had grown with relatively few levels of management, leading divisional managers to become directly involved with operational, day-to-day issues. Beigel felt that they should be released from those routine issues:

> I estimate that 60% of our managers' time is tied up with operational issues, 20 to 30% with tactical issues (e.g., managing programs), and 10 to 20% with strategic, long-term issues. I'd like to reverse this battleship mentality and have our managers spend most of their time thinking strategically. Hopefully we can spend 60% of our managers' time on strategic issues, 35% on tactical issues and only 5% on operating, day-to-day issues. We can't afford to take years to implement strategic changes because our managers are overburdened by operating concerns. I see the BSC as a tool to help managers fully participate in strategic discussions with our board of directors. We should deploy our resources better by encouraging our managers to delegate more operating decisions and by taking those decisions to the lowest level possible in the organization. In order to do that, we'll need to get out of our "comfort zone" and get rid of some "ghosts" in our ways of thinking about the work we do. For example, we'll get rid of the "ghost" that if a manager doesn't do something himself it won't get done well by somebody else. The most striking discovery we'll make I think is that 50% of the work we do isn't really contributing to our goals. As an example, at corporate we receive lots of data that are simply not relevant at our level, so we should have streamlined reports. We need to stop performing the less relevant work, while still making people continue to feel valued by our organization.

THE BEGINNING OF THE BALANCED SCORECARD AT COLA

In May 1997 Beigel attended a satellite conference at the University of Baltimore about the Balanced Scorecard featuring the inventors of the BSC framework, Drs. Robert Kaplan and David Norton as the keynote speakers. Beigel, who graduated from the MBA program at the Merrick School of Business at the University of Baltimore in 1991, had long been an advocate of strategic planning and was intrigued by the potential benefits of the BSC for his organization. He gave a copy of *The Balanced Scorecard*[1] book to Kroger and continued his efforts towards developing a strategic performance management system for COLA. By Fall 1999 the CEO had become convinced of the need to adopt a strategic tool such as the BSC. Kroger remembered his initial reaction to the BSC:

> After our intense effort and tremendous success with teaming, I was reluctant to try another management tool that might bring just passing benefits. I've stayed away from other management fads, but the BSC was different. I saw how it fits with our vision, strategy, and values. It has the potential to transform our organization. We have so much untapped talent in our people. I would like to bring everyone in COLA to thinking strategically and doing their jobs with our strategy in mind. In our "Keepin' Up with COLA" (KUC) meetings I've heard employees saying that they understand that COLA does accreditation for a lot of physician office laboratories, but they're not quite sure where the company is going. I hope that in two or three years after implementing the BSC I'll be able to go up to any employee in this organization and ask, "Tell me how your individual job fits in with the organization's strategic goals," and hear a good answer.

In late 1999 Beigel started a search for a consulting company that would help COLA in this endeavor, and distributed copies of *The Balanced Scorecard* book to the four divisional managers in the beginning of 2000.

After selecting to retain Performance Measurement Associates – ORC/Macro International as the consultant, a strategic planning retreat was held on March 28-29, 2000, involving the consultant and the top management team (Kroger, Beigel and the four divisional managers). During the retreat the BSC was discussed as a tool to help implement strategies and monitor future performance. The consultant proposed a

[1] Kaplan, R. S. & Norton, D. P. *The Balanced Scorecard*. Boston, MA: Harvard Business School Press, 1996.

Dynamic Business Scorecard (as distinct from a balanced scorecard) consisting of five perspectives: people, process, offering, customer behavior and business results. Each perspective would have four elements: **strategic goals** (statements of strategic intent; e.g.: to have loyal customers); **measures or drivers** (performance categories for each goal; e.g., customer satisfaction); **metrics** (specific operationalization for each measure; e.g., percent of highly satisfied customers answering a survey); and **targets** (desired level of achievement for each metric; e.g., 70%).

On the first day of the retreat, the consultant introduced the elements of the scorecard, and led a discussion on the benefits and limitations of the scorecard, using examples from practice. On the second day the consultant focused on the process of building a scorecard, and facilitated discussions among the managers about which goals should be included under each scorecard perspective. Then the managers worked on identifying measures for each of the scorecard goals. Last, they discussed specific metrics that could be used to track progress along some of the scorecard measures.

The division managers' reactions ranged from great enthusiasm to great hesitation. For example, one of the managers came out of the retreat ready to start developing a BSC for his division. Other managers characterized the retreat as "scorecard indoctrination" and were not convinced that its benefits would outweigh its costs. One manager commented, "We learned to drink the cool-aid. We all saw the potential benefits of a corporate scorecard that took a broader view of the business. But after the retreat we had to debunk some myths and start adding some 'meat' to the very generic scorecard we had agreed to during the retreat." Beigel, while encouraged by the positive reaction from some managers, had to tell them to slow down in their implementation until the team had had a chance to workout the basic framework for the corporate BSC. As first steps, they developed a list of reasons for implementing the BSC (**Exhibit 4**) and a business scorecard lexicon (**Exhibit 5**) to ensure the same understanding of the technical language required by the scorecard model.

THE DEVELOPMENT OF THE CORPORATE SCORECARD

After the initial guidance on the framework for the corporate scorecard provided during the retreat, the management team took over the development of its own set of goals, measures and metrics. During the months following the retreat, the management team met weekly to discuss the corporate scorecard. One of the division managers recalled the focused attention these meetings required: "It would often take us at least ten minutes at the beginning of each meeting just to warm up and start thinking about the corporate BSC again. During the week we were all so busy with the daily activities of our divisions that when we met on Fridays it was hard to gear up and redirect our attention to the scorecard."

Exhibit 6 shows the BSC model developed by the management team and updated in July 2000. Following the framework for the dynamic business scorecard proposed by the consultant, COLA's corporate scorecard depicted the perspectives of "people" and "process" as enablers for the "offering" perspective. The results of the "offering" perspective influenced the "customer behavior" perspective, which in turn was reflected in the "business results" perspective. One of the divisional managers questioned this framework for the corporate scorecard:

> Our scorecard reflects a linear understanding of how the perspectives are linked to each other. We can read the scorecard starting from business results on the right and move towards each box on the left and understand the causal links. I'm afraid, however, that this linear understanding may lead to

perspectives that are not really balanced. Doesn't that defeat the BSC's main assumption of all perspectives being balanced with each other?

For each perspective, the management team first selected corporate goals and corresponding measures (see **Exhibit 6**). The rationale for each perspective is summarized below, starting with the business results perspective and moving from right to left:

Business Results

The business results goals included qualitative aspects such as "promote excellence in patient care" and "expand the image," as well as a quantitative goal to "grow the business." While in the1990s practically all of COLA's revenues had come from the laboratory accreditation business, in 2000 about 10% of total revenues related to diversified services. Prompted by the board of directors, the management team planned to diversify even further in 2001, to reach 20% of total revenues from products other than laboratory accreditation. On average, however, management wanted to maintain a portfolio of programs and services that met at least a threshold level of total return on assets, so that more mature products could help newer products that still required major investments in assets.

Terie King, accounting coordinator, commented on the challenges of developing financial metrics for the goal to "grow the business:"

> Half of our budget is salaries and benefits. That's our most valuable resource. We also commit significant resources to information technology and other major capital expenses. What are appropriate metrics to tell us when a product is costing too much, or not earning enough to justify the human investment we make in it? We have started developing an activity-based costing model to help us understand which activity centers are relevant and how our costs (including time spent by key personnel) relate to each of our products. We've also installed COGNOS software to assist in our BSC implementation. But will our current systems handle the new needs imposed by activity-based costing and the BSC?

For the goal "expand (or broaden) the image" the managers selected "brand equity" to measure the perception that all key types of customers (or constituencies) held about COLA's products. The goal to "promote excellence in patient care" was viewed as the most important for COLA; it was the very reason why the organization was created. In order to operationalize this overarching goal the management team selected a measure that related to one of the desired results, namely "providers with established systems for error prevention." This measure was directly motivated by recent regulation on error prevention in medical practices. When the scorecard was presented to COLA's board of directors in June 2000, some directors were surprised that this goal and corresponding measure even had to be included in the scorecard, since they assumed that this goal had already been achieved. The management team responded that this goal also related to the "customer behavior" perspective, and that they had decided to spotlight it as a business result to emphasize its continuing relevance to COLA.

Customer Behavior

Two of the customer behavior goals were directly linked to two business results goals: "support customer behavior change" (measured by degree of "conformance with patient safety and laboratory

standards") was directly related to "promote excellence in patient care"; and "increase COLA awareness among all constituencies" (measured by the "perception of COLA" by current as well as prospective customers) was directly related to "expand the image." The other goal in the customer perspective, "acquire and retain customers," was of major importance to COLA as the market for laboratory accreditation underwent significant changes.

COLA approached customers to establish new contracts using several distribution channels. In some cases, COLA approached the physicians directly to inquire about their needs. In other cases, the HMO was the initial point of contact. More recently, COLA had been successful in contacting large employers to assess their needs regarding the comparison and purchase of healthcare plans. These contacts could take two years before COLA representatives had access to the real decision makers in those large employer organizations. It would then take an additional three to six months to design and sign a contract for COLA to become the agent that would help select healthcare plans for that employer. By the time the contract was to be signed, however, the key decision makers were likely to have changed employers and the process would start again.

In the past three years COLA surveyed laboratories that had withdrawn from COLA's accreditation program to determine typical reasons for why customers discontinued business with COLA. The data suggested that the two most frequent reasons for withdrawals were the switch to waived tests and laboratory closings. Some laboratories had discontinued moderate to high complexity testing, focusing instead on waived tests. Waived tests required only Food and Drug Administration (FDA) approval but no accreditation, thus significantly reducing operating costs for laboratories. Other laboratories were closing simply because they could not cope with the increasing costs of equipment, labor and regulatory issues. Only 12% of all withdrawn laboratories cited using another agency as the reason for withdrawing. Among those, most laboratories cited a merger with a larger group that was already enrolled with another accrediting agency, or a mandate of a particular group or state requirement as reasons for using another accrediting agency. Out of a total of 1,514 laboratories that withdrew from COLA's program in the three-year period between 1997 and 1999, only 5 reported dissatisfaction with COLA's services. Based on the projected number of laboratories withdrawing from COLA's program in the period between August 1999 and July 2001, COLA managers estimated $2.8 million in lost revenues.

Offering

The management team selected three goals for the offering perspective: "provide superior products and services" (as perceived by customers); "increase diversification" (through constant new product introduction); and "become thought leaders" in the industry (through the creation of new opportunities and partnerships to demonstrate COLA's capabilities). In order to achieve the position of "thought leader" the managers were considering not only current partnerships, but also possible future alliances that they should be pursuing. "Customer satisfaction" was perceived as a major driver for the offering perspective, and a key strategic advantage for COLA over its competitors. As Robert Trachman, manager of the corporate communications and marketing division explained, "We create very satisfied and loyal customers. What sets us apart is our focus on education and excellent service, that's why we're proud of delivering our services the COLA way. And this influences every customer with whom we get in touch."

COLA had been conducting frequent customer satisfaction surveys. Customers were asked to fill out a survey questionnaire within 180 days after the initial contact with COLA. By 2000, the customer satisfaction index had reached 97% comprising areas such as knowledge, courteousness, efficiency and promptness. Yet,

divisional managers did not feel that they had enough information to understand the various factors that combined to produce their high customer satisfaction index.

Process

The management team had identified three key goals for the process perspective at the corporate level: to "improve internal quality assurance" at COLA; to "develop and implement an R&D process" (in order to keep an active "product flow" by discontinuing products that did not meet customer needs, and constantly introducing new products); and to "conduct scientific research." A recent development in the area of proficiency testing for laboratories had increased COLA's interest in conducting scientific research. COLA had obtained a grant to study the correlation between proficiency testing and accreditation for laboratories, examining the question of whether or not the fact that a laboratory had passed proficiency testing increased the chances that it would also become accredited. Laboratories had been spending massive resources into proficiency testing but no systematic evidence to date had confirmed if it had any real implication for quality standards. The process of conducting scientific research studies such as this one was considered critical for corporate goals in other perspectives such as "become thought leaders," "increase COLA awareness," and "expand the image."

People

Consistent with COLA's corporate values (refer to **Exhibit 3**) the people perspective included goals to "foster premier work environment" (measured by employee satisfaction), "promote teaming culture," "foster climate of empowerment, innovation & learning" (measured by "baseline decision making," or the ability of employees to make decentralized decisions) and "expand intellectual capital." In recent months COLA had been reviewing job descriptions with the objective of pushing more decision authority down to the lowest levels in the hierarchy, so that the goals of fostering empowerment and a premier work environment had already been receiving much attention. The measure in the people perspective that still needed the most work was the "degree to which intellectual needs were being met." The human resources department had consistently promoted training and professional development programs, but the goal of expanding intellectual capital required a more detailed understanding of the current capabilities of the staff, compared to an assessment of the skill needs that would be required to perform their jobs in the current and future work environments.

Metrics and Targets

The overall corporate scorecard as it stood in July 2000 included 17 measures. A special taskforce was formed to work on selecting detailed metrics to track progress along each of the performance measures. The task force included the COO Doug Beigel, Jerry Weiss (manager of the operations division in charge of human resources, training, production, Internet and information systems) and Robert Martig (manager of the surveys division in charge of supervising all surveyors on the field). The task force had been meeting regularly since June, and expected to complete the metrics selection by early fall.

A related step in the development of the corporate scorecard was to determine quantifiable targets for each metric. Some activities were harder to quantify than others. For example, the task force struggled with appropriate metrics for measures such as "baseline decision making" in the people perspective. Should they focus on the extent to which job descriptions were expanded to include more decision making in the lower

levels of the hierarchy? That metric would focus on the *effort* to decentralize decision making, but some managers argued that in the end the *outcome* of whether or not employees felt that they were actually making more decisions on their own is what mattered. But even if they could agree on the appropriate metric, what target would be appropriate for this metric? Should they be trying to achieve 50% baseline decision making? Or 100%? The management team felt that in the first couple of years of implementing the scorecard the emphasis would be on developing an information system to collect data on actual performance along each metric, so that in the future they could select targets that were more realistic, yet contained a level of "stretch" to encourage innovation to expand current capabilities.

DIVISIONAL SCORECARDS

Each divisional manager met with his staff in June 2000 to first introduce the corporate scorecard. One manager chose to show the corporate goals first, and invited his subordinates to discuss how to apply them to the division. Another manager followed the "socratic method" and asked divisional personnel to present what they thought the divisional goals should be first, then showed the corporate scorecard to illustrate how their divisional goals fed into the corporate goals.

Robert Martig, manager of the surveys division, recalled the reaction from his staff to the corporate scorecard and the plan to rollout the corporate scorecard to the divisional and departmental levels:

> Medical technologists are very direct, sometimes blunt, and they're used to getting things done. Their first reaction was, "We have plenty of work to do, why do we need this? If this scorecard is so complicated to implement in our division, why should we spend our time on this?" As a technical person myself, I understand where they're coming from. My task now is to show them that the scorecard is not another additional job, it's a tool that can help them do their jobs better, that it can benefit all of us directly. From a corporate viewpoint, the BSC will help us all work towards the same goal. We know that whatever big changes we'll implement will be in the context of the corporate scorecard, because we'll have to consider what we can do to help achieve the corporate goals.

Robert French, manager of the accreditation division, agreed, but also had some reservations:

> It used to be that each division would negotiate its own goals, and divisional managers would be evaluated on how well they were achieved, sort of a management by objectives approach. For example, one manager would set an objective of developing a new quality assurance plan for next year. But there was little coordination among the various divisional objectives, and no direct link –for the most part – to overall organizational goals other than improving division processes. An exception would be financial measures of performance in which case it would be easier to make specific adjustments to increase revenue or decrease costs. With the scorecard's emphasis on operating, nonfinancial measures, everybody has a greater stake. That's not to say, however, that it'll be easy to sell the scorecard approach to my folks. I'm still not sure if this will work at the divisional level, especially in a small, flat organization like ours. In a large corporation, say, Chemical Bank, you have corporate staff dedicated to building the scorecard metrics, testing them, etc. In our organization, all of us have daily tasks with deadlines to meet. My division's role in the accreditation process is much like an assembly line: we have to keep the process moving, and we don't have the luxury of relying on staff people to do the scorecard work for us. The challenge will be convincing people that even though the work will pile up while they develop the scorecard, it will benefit them in the long run.

The management team met for a one-day retreat on July 12, 2000, led by the consultant, to start developing the divisional scorecards. The assistant divisional managers were also invited to participate. During the retreat the consultant reviewed the basic elements of the scorecard, led a discussion of the current version of the corporate scorecard, and facilitated the work the managers did to prepare an initial draft of a divisional scorecard. The first division selected for the rollout plan was the corporate communications and marketing (CC&M) division.

The managers discussed, for each perspective, which corporate goals applied to CC&M. The only corporate goal that did not seem to relate to CC&M was "conduct scientific research." They decided that if any department within the division performed work related to a goal in the corporate scorecard, that goal should also be part of the divisional scorecard. They also considered if there were any other goals that were "mission-critical" for CC&M that were not in the corporate scorecard but should appear in the CC&M scorecard. Next they followed a similar method to identify the corresponding divisional measures for each goal. For example, the business result goal to "grow the business" corresponded to the measure in the CC&M divisional scorecard of "revenues generated from campaigns and sales efforts." Other measures had to be slightly adjusted, such as "new product introduction" in the corporate scorecard which was changed to "new product development and the 4P's of marketing" in CC&M's scorecard. The managers emphasized who would "own" each goal, and tried to find measures that were within the control or area of influence of the "owner" of the corresponding goal.

At the end of the day, the scorecard for the CC&M division closely resembled the goals and measures in the corporate scorecard. But many questions were raised by the rollout plan:

- Should every division have goals related to each of the five perspectives? Proponents of this viewpoint argued that everything the divisions do should be in direct or indirect support of the corporate goals. Others argued that if the linkages between divisional and corporate goals became too "far-fetched" the scorecard would lose credibility.
- Should the sum of the goals of the divisions add up exactly to the corporate goals? How would the COGNOS software purchased to support BSC implementation aggregate divisional data to produce overall corporate reports?
- Should the measures be different for each division? In particular, how should work that offered indirect support to the corporate goals be measured? For example, one division working to "seek/create opportunities or partnerships" would offer indirect support for the corporate goal to "become a thought leader," but how should one measure opportunities and partnerships at the divisional level in light of this goal?
- How many measures in total should each division have?
- Should the metrics be based on effort or outcome?
- How would the metrics be used for evaluation of managerial performance?
- How many metrics would be lagging or historical measurements, and how many would be leading indicators of future performance? Some managers felt that once the scorecard replaced a performance measurement system based on financial indicators only, the new scorecard should include only leading, future-oriented measures, and few or no financial measures reporting on past performance.
- How frequently would they report actual performance for each metric? For example, should the "employee satisfaction index" be reported daily, monthly, or annually? Daily measures would put too much pressure on customers and employees, but how useful or current would annual metrics be?

- How would they communicate about the scorecard with laboratory surveyors who worked from home offices spread all over the US?

Martig called attention to the importance of clarifying how the measures and metrics would be interpreted in practice:

> During our meetings we have all agreed to some measures such as customer satisfaction or brand equity. But now we have to figure out how to interpret them. For example, I can argue that the quality of the reports my surveyors prepare may or may not contribute to customer satisfaction. How are we going to measure this? We can ask the last 100 customers who called our IRC about their satisfaction, but which survey instrument are we going to use to assess their satisfaction levels? The choice of the right survey instrument is critical!

IMPLEMENTATION PLANS

On July 13, 2000, the day after the management retreat to discuss the divisional scorecards, there was a company-wide "Keepin' Up with COLA" (KUC) meeting to present the corporate scorecard to virtually all employees. All in attendance, including the receptionist, sales representatives, managers, accountants, etc., received a copy of the corporate mission and values and of the latest version of the corporate scorecard (see **Exhibits 3 and 6**). A similar copy of the corporate scorecard had been distributed electronically to the whole company prior to the KUC meeting.

Kroger was aware that this phase of the implementation plan, when the scorecard would be communicated to all employees, was the riskiest one. Some of the managers had already completely bought into the scorecard framework, developed a sense of ownership over the chosen goals and measures, and started devoting more attention to the strategic issues raised by the scorecard. But if the rest of the employees did not see how their jobs fit in with the corporate scorecard or if they did not recognize any benefits from the scorecard for themselves, all the time and resources invested in developing the scorecard so far would be in jeopardy. This issue had been raised the day before by one of the assistant divisional managers during the one-day retreat to discuss divisional scorecards. Kroger led the KUC meeting clarifying that the purpose of the BSC for COLA was to score the organization, not the employees. **Exhibit 7** shows excerpts from Kroger's opening speech at the KUC meeting, which was later made available to all employees at the organization's intranet.

After Kroger's speech, two of the divisional managers, Trachman and Weiss, made a presentation of the corporate scorecard goals and measures. Metrics and targets were also mentioned but not discussed in detail, as the management team was still working on those elements for the corporate scorecard. Trachman felt that the employees within each division should choose which metrics were appropriate for the divisional scorecard. Some employees in attendance were called to give examples of how their work related to some of the corporate goals. Weiss emphasized:

> This process will require participation from every one of us. Now someone may say, "The person who does the mailing has nothing to do with the corporate goal of expanding the image, that is the job of the CC&M division." That is wrong. If they did not do the mass mailings, how would the

> marketing department expand the image? We want everybody to see how they can directly or indirectly support the corporate goals.

The participants asked only a few questions, and most were related to personnel policies, not the scorecard. The atmosphere was congenial and relaxed. At the end of the meeting, Beigel and Kroger highlighted the next steps in the implementation plan:

- by September all divisional scorecards would be completed;
- in the upcoming months, KUC meetings, which used to be held quarterly, would be held every 6-9 weeks to keep all personnel informed about progress on the divisional scorecards and address questions or concerns;
- by January 2001 all the elements of the scorecard (including metrics) and its supporting information system would be in place to start reporting actual performance data in order to build benchmarks that could serve as future targets;
- in February 2001 the next board of directors meeting would set new directions for COLA, and the BSC would be used as the planning tool to implement the new set of strategies (Beigel had hired a strategy consultant in preparation for this meeting);
- By June 2001 the business plan for the next fiscal year would be completed following the BSC framework.

Beigel was aware of the intense work ahead. Beigel and Weiss had offered to assist any division in the process of building its divisional scorecard. In addition, Beigel and his colleagues in the metrics task force had committed to spending four hours a week to work out the details of the metrics. After the divisions finished designing their scorecards in September 2000, the division managers planned to rollout the scorecard to the departmental level. Some managers had already started working on their own individual scorecards, even though that was not required. The ongoing project to implement activity-based costing would help determine the target areas for improvement. Human resources would continue to perform task analysis for all positions and revise job descriptions, and prepare professional development plans and a training schedule. The communications department would work on a corporate communications plan to assist in the implementation of the details of the scorecard at all levels. Data on actual performance at all levels were expected to become available electronically to anyone inside the organization in 2001. This kind of data was intended to help managers prepare detailed reports that would compare, for example, profitability among different types of services, regions or customers. Beigel anticipated that the BSC would gain increasing importance at COLA:

> From the beginning our motivation to implement a scorecard was our commitment to strategic planning by the whole organization. Accountability and linking performance metrics to incentives may come later, when we feel more comfortable that we have the right metrics, and that they reflect our strategies.

EXHIBIT 1
Organizational Chart (Revised July 2000)

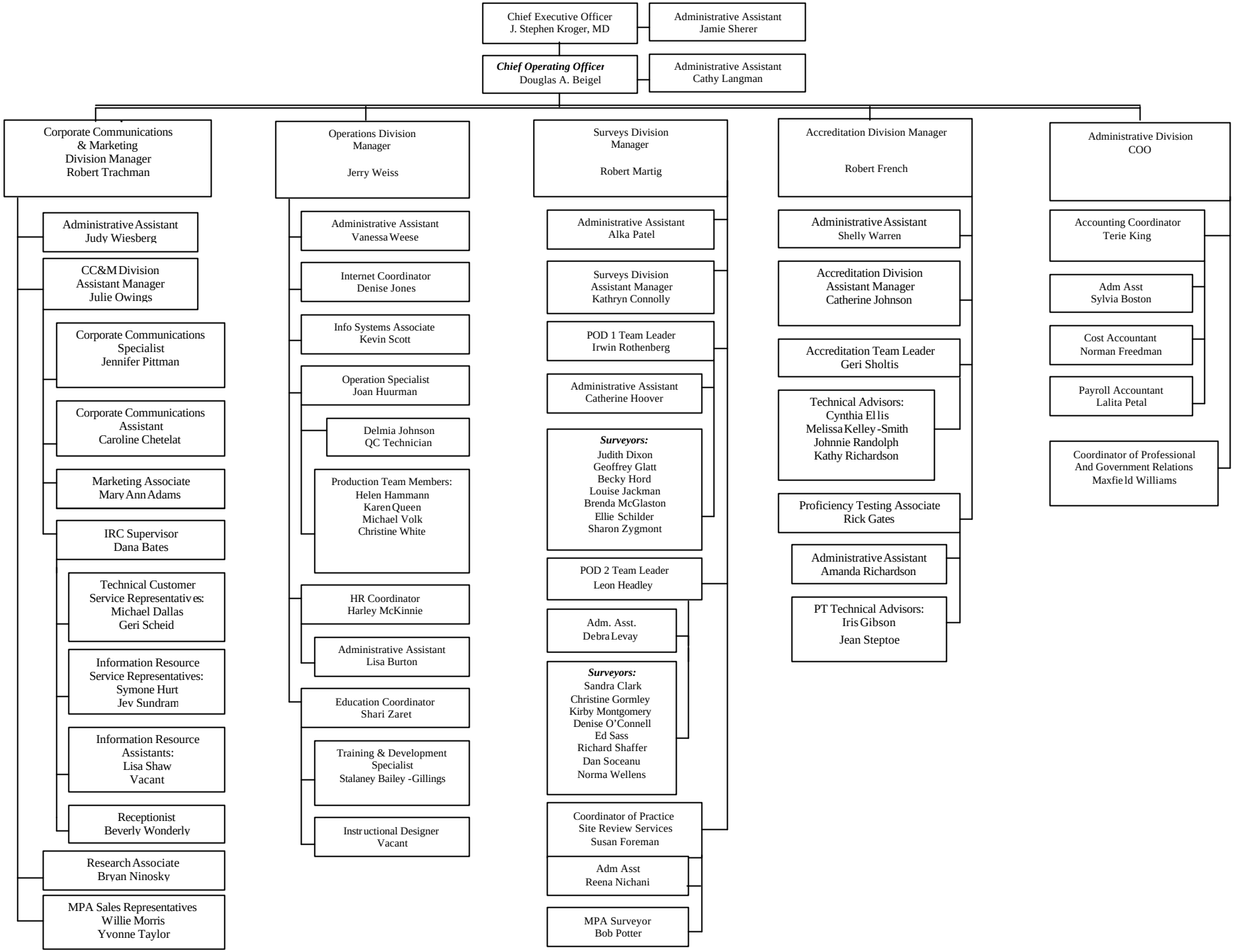


EXHIBIT 2

Financial Summary

Income Statement, June 30	2000 Projected	1999 Actual	1998 Actual	1997 Actual	1996 Actual	1995 Actual	1994 Actual	1993 Actual	1992 Actual	1991 Actual	1990 Actual	1989 Actual
Revenue:												
Application Fees	5,397,835	4,697,078	4,584,609	4,655,743	4,661,996	4,590,506	3,231,811	1,376,296	883,795	697,890	388,954	57,184
Member Fees	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	120,000	105,000	135,000	60,000
Interest & Other Revenue	730,449	595,434	545,715	526,045	503,236	342,199	174,649	82,468	60,498	29,592	15,988	4,711
Total Revenue	6,258,284	5,422,512	5,260,324	5,311,788	5,295,232	5,062,705	3,536,460	1,588,764	1,064,293	832,482	539,942	121,895
Expenses:												
Salaries & Other Benefits	3,387,454	3,093,307	2,979,614	2,899,774	2,886,044	2,720,452	1,804,988	689,326	521,601	352,241	207,157	207,157
Office Expenses	423,309	400,703	401,550	452,798	354,288	459,661	331,878	194,947	134,114	87,128	54,924	40,979
Consulting, Legal & Acct Fees	776,688	689,874	499,393	604,666	579,336	575,121	561,730	418,522	318,253	105,720	76,155	61,333
Mkt, Prom & Adv.	111,681	77,920	114,253	47,948	4,378	8,880	4,855	3,291	31,863	23,149	-	-
Training	9,943	12,303	15,362	27,054	57,801	30,305	30,969	32,881	3,483	-	-	-
Office Rent	231,171	231,722	231,171	231,820	226,916	180,911	148,650	73,657	60,782	47,056	30,584	11,829
Travel	518,453	513,531	510,096	512,421	534,015	491,141	329,276	48,778	14,188	7,514	15,083	8,905
Meetings	14,716	8,308	11,151	13,341	12,187	9,592	9,639	5,371	7,592	8,587	8,308	6,849
Insurance	35,495	39,433	58,359	60,380	59,328	56,874	12,567	6,536	3,413	1,910	7,862	2,206
Miscellaneous	12,623	9,211	7,678	7,637	10,221	9,743	34,986	17,515	6,507	4,520	4,303	3,283
Bank Fees	15,087	14,960	12,082	17,958	13,049	15,519	12,536	8,332	2,490	-	290	196
Dues and Subscriptions	11,856	12,007	18,915	9,250	5,753	6,088	2,179	2,177	1,376	2,070	949	1,568
Depreciation	143,936	144,507	137,049	138,150	147,580	135,682	91,384	56,587	50,102	37,306	21,769	3,676
Taxes	9,347	12,434	11,134	13,854	13,990	4,391	4,563	2,566	2,847	1,285	-	-
Grant Expenses	-	-	-	28,645	64,259	39,753	-	-	-	-	-	-
Interest Expense	30,073	11,754	-	3,076	9,681	10,232	4,435	2,085	2,859	2,012	2,210	-
Total Expenses	5,731,832	5,271,974	5,007,807	5,068,772	4,978,826	4,754,345	3,384,635	1,562,571	1,161,470	680,498	429,594	213,241
Net Income Before Gain/Loss	526,452	150,538	252,517	243,015	316,407	308,360	151,825	26,193	(97,177)	151,984	110,348	(91,346)
Reald. & Unrealized Gain/Loss	50,000	47,694	359,661	319,963	214,246	241,565	-	-	-	-	-	-
Ch. in Unrestricted Net Assets	576,452	198,232	612,178	562,978	530,653	549,925	151,825	26,193	(97,177)	151,984	110,348	(91,346)
Balance Sheet, June 30												
Assets:	2000 Projected	1999 Actual	1998 Actual	1997 Actual	1996 Actual	1995 Actual	1994 Actual	1993 Actual	1992 Actual	1991 Actual	1990 Actual	1989 Actual
Total CA	815,720	1,645,304	736,243	1,466,932	906,591	2,118,287	4,545,824	3,983,296	426,293	558,133	401,966	149,855
Furniture and Equipment*	360,887	421,843	292,115	399,076	463,292	537,016	549,532	194,734	164,663	147,781	74,649	18,566
LT Investments	6,981,805	6,411,927	5,915,072	5,190,375	4,559,501	3,707,354	-	-	-	-	-	-
Other Assets	16,525	15,491	11,643	8,847	14,410	18,689	10,988	11,369	11,738	3,060	2,691	3,740
Total Assets	8,174,937	8,494,565	6,955,073	7,065,230	5,943,794	6,381,346	5,106,344	4,189,399	602,694	708,974	479,306	172,161
Liabilities												
Total CL	3,717,902	4,058,221	3,577,246	3,766,024	3,788,432	4,121,709	3,643,410	2,557,783	104,968	135,594	52,638	63,507
Total LT Liabilities	1,174,791	1,730,552	870,267	1,403,824	822,957	1,699,450	1,211,107	1,531,614	423,917	402,394	407,666	200,000
Unrestricted Net Assets	3,282,244	2,705,792	2,507,560	1,895,382	1,332,405	560,187	251,827	100,002	73,809	170,986	19,002	(91,346)
Total Liab and Net Assets	8,174,937	8,494,565	6,955,073	7,065,230	5,943,794	6,381,346	5,106,344	4,189,399	602,694	708,974	479,306	172,161

EXHIBIT 3

Mission, Vision, Goals and Core Values

Mission

COLA is a physician-directed organization whose purpose is to promote excellence in laboratory medicine and patient care through a program of voluntary education, consultation, and accreditation.

Vision

COLA recognizes two essential obligations in order to meet its mission:

1. To support physicians in their pursuit of excellence in patient care, clinical medicine, and laboratory testing:
2. To assure the American people that accredited facilities meet high standards of healthcare delivery and to educate them regarding laboratory medicine and healthcare.

To meet these obligations, COLA has established the following goals:

- *Service*
  To provide physicians a mechanism to demonstrate excellence through accreditation.
  To provide excellent service to all customers.
- *Education*
  To structure accreditation as a learning process
  To permeate (leaven) all COLA's activities with learning
  To utilize Socratic Teaching as the best model for adult education
- *Collaboration*
  Within the House of Medicine
  With its founding members
  With physicians in developing evidence-based standards.
- *Competence*
  In developing evidence-based standards
  In the efficient administration of the accreditation process
  In standing accountable for its structure, functions, and decisions

Core Values

- *Teamwork:* Valuing the strength and opportunity afforded by teams
- *Integrity:* Honesty and fairness in all customer interactions
- *Customer Focus:* Keeping customer needs foremost in our actions and listening to customer feedback
- *Continuous Improvement:* A consistent emphasis on internal evaluation and enhancement.
- *Ownership:* A personal commitment to COLA customers, colleagues, programs, and the professional way in *which we do business*
- *Enthusiasm for Excellence:* Kindling and maintaining the spark for quality performance

EXHIBIT 4

Reasons for Implementing the BSC

Why not create a COLA scorecard?

- More work
- May confuse more than enlighten
- Potential to be disruptive
- New metrics – more $
- May limit thinking
- May be worse off – less agile
- May focus too much on process
- May not add value?

How might a scorecard be used at COLA?

- Provide strategic direction
- Communicate to other staff
- Systems approach
- Framework to help people think strategically
- Help get ideas from all levels
- Measurement tool
- Communicate value across all areas
- Communicate with Board
- Foster change in mindset – not being afraid “to fail”

How would that change how we manage the business?

- Help strategic planning
- Reallocate how managers use their time
- Bring more planning and innovation
- It becomes a management tool
- Facilitate cross-functional sharing – among managers & among staff
- Clarifies value of individuals
- Help develop goals supported by measures
- Help us include leading indicators
- Help evaluate measures and assumptions

EXHIBIT 5

COLA's Business Scorecard Lexicon

COLA's Corporate Scorecard Provides:
An expanded and systematic approach to goal setting and performance measurement to include all key areas of our business. These areas include a focus on people, process, offering, the customers' behavior, and business results in a way that causes success.
An illustration of our "high level" strategic goals and the tools we use to measure and predict our probability for success.
Effective ways to identify key drivers and build future strategies and capacities to improve long-term performance.
The Division Scorecard:
Links division level goals to the Corporate Scorecard.
Identifies goals, measures and metrics that will tie directly to the goals of the Corporate Scorecard. In several cases the Division will utilize and implement the metrics of the Corporate Scorecard. Will show how the initiatives of each Division are represented in goals and measures. In many cases the initiatives will require cross-divisional teaming and action to accomplish stated goals.
Goal:
A statement of strategic intent for the organization.
A desired result.
Measure:
An outcome of something else. (e.g. customer satisfaction)
Can include leading (measures that predict the future) and lagging (measures the past) indicators.
Few in number.
Metric:
The measurable value of measure/driver. (How much? How fast? Etc.)
Obtainable
Reliable
Precise
Target:
The bull's eye or desired point of arrival for each measure.
Represents a stretch or going just beyond what we think we can readily accomplish.
These stretch targets can encourage innovation and enthusiasm.
Developed by incorporating our best understanding of existing baseline capability, competition, process limits and customer expectations.
Strategic Planning:
Process of establishing goals as well as plans to accomplish them.
Long range (3-5 years)
Tactical Planning:
Process of selecting methods of achieving organizational goals.
Medium range (1 year)
Operational Planning:
Process used to implement tactical plans and prioritize routine functions – short range (1-4 weeks)

EXHIBIT 6

COLA's Corporate Balanced Scorecard

People	
Goals	**Measures**
Foster Premier Work Environment	Employee Satisfaction
Promote Teaming Culture	Team Effectiveness
Foster Climate of Empowerment, Innovation & Learning	Baseline Decision Making
Expand Intellectual Capital	Degree to Which Intellectual Needs are Being Met

Process	
Goals	**Measures**
Improve Internal Quality Assurance	QA Plan & Current SOP's
Develop & Implement R&D Process	Product Flow
Conduct Scientific Research	Approved Research Protocols

Offering	
Goals	**Measures**
Provide Superior Products & Services	Customer Satisfaction
Increase Diversification	New Product Introduction
Become Thought Leaders	Seek/Create Opportunities or Partnerships to Present COLA's Capabilities

Customer	
Goals	**Measures**
Support Customer Behavior Change	Conformance with Patient Safety and Laboratory Standards
Acquire and Retain Customers	Acquire/Retain Customers
Increase COLA Awareness Among All Constituencies	Perception of COLA

Business Results	
Goals	**Measures**
Promote Excellence in Patient Care	Providers with Established Systems for Error Prevention
Grow the Business	Return on Assets
Expand the Image	Brand Equity

EXHIBIT 7

Message from Dr. Kroger (KUC Meeting- JULY 13, 2000)

At our Annual Meeting this year, you spent the morning planning COLA's future and came up with a lot of great ideas. Many of you have expressed your interest in COLA as an organization, its business side and its opportunities. This interest has led us to study a management system that includes you in the development of goals for COLA and provides the means to help keep your eye on those goals.

Even more important is that we work in a world that is changing at an every more rapid rate – for example, Ecommerce, the New Economy, the changing interface between customer and provider, and the shortening time from conceptualization of a product to market.

As COLA employees, we also have to change or we stand a great risk of being swamped under the waves of the future. We have to find new ways to do our work with innovation and efficiency and to engage the enormous potential within each of us. Identifying and staying focused on those things that build value for COLA and our customers – and to achieve our vision as an organization – is called Strategic Thinking. Questions like:

- What is important for COLA?
- How do we stay focused on those goals?
- How will we measure our progress?
- How do we know that we are staying on the right track?

That's what Strategic Thinking is all about. And that's what we are talking about today and for a long time to come – a tool to help us stay focused on the important things for COLA. It's called the "Balanced Scorecard". The name "scorecard" could mislead you into thinking that COLA is keeping score on you.

While we will keep "score", we're scoring outcomes for COLA, not individuals. This is not a personnel management tool but a business management tool.

One of the key things that makes COLA so dynamic is your substantial abilities in teaming. Before we learned how to team, we were not nearly as successful as we are now. But teaming didn't just happen -- It was a real struggle for about a year to get into the habit of teaming and to begin to see the benefits. It has now become part of our culture at COLA and is "transparent". Now we are now going to take another major step forward together – a step as big, and as scary, and as difficult - and as rewarding - as team training.

I want you to know that we are approaching this in the same spirit as we did teaming and in keeping with COLA's values:

- Teamwork
- Integrity
- Ownership
- Continuous Improvement
- Enthusiasm for Excellence

This is a process that we intend to approach in a fashion that individuals should not feel that they will be blamed or judged for outcomes. We will work together, cooperate with one another, get our questions and concerns answered, learn from our mistakes, and share our frustrations. I do want to emphasize to you how important this new initiative is to COLA and how committed I am to this effort, and how committed your Management Team is to the scorecard tool. The process is going to be the new cornerstone for how people will work at COLA.

Each division will create their own scorecard in the next few months, although the entire process will take some time to completely implement. If you were unable to attend the meeting and are interested in viewing the July 13, KUC PowerPoint presentation, please download the KUC file below.

Balancing the Corporate Scorecard
Interactive Simulation

Joseph G. Donelan
University of West Florida
and
W. Timothy O'Keefe
University of West Florida and Universiteit Nyenrode

Contact Author:
Joseph G. Donelan
University of West Florida
11000 University Parkway
Pensacola, FL 32514
(850) 474-2717
jdonelan@uwf.edu

Balancing the Corporate Scorecard
Interactive Simulation

EXECUTIVE SUMMARY

This case is based on *Harvard Business School Publishing Balancing the Corporate Scorecard 2.0* (1999),[1] an interactive simulation program. The simulation case operationalizes the concepts and processes of the balanced scorecard as developed by Robert Kaplan and David Norton (1996). In *Balancing the Corporate Scorecard 2.0*, participants are given the task of developing a balanced scorecard for a hypothetical software development company. The scorecard is then used to run the company during a period of stiff competition, shifts in customer demand, and short product life cycles. The key advantages of this learning tool are (1) it provides an experiential learning, and (2) unlike other simulations, participants are not competing against each other in a win-loose environment. Therefore, there is less between-participant competition and greater focus on the learning experience.

The manuscript presented here is a supplement to the HBS simulation software. This case supplement represents a significant contribution the usefulness of *Balancing the Corporate Scorecard 2.0* by providing detailed application instructions for classroom use. This case supplement includes detailed instructions to students, linkages to literature and college textbook materials, teaching notes, spreadsheet templates, and recommended solutions.

Recommended use

The simulation is not strictly an "accounting" case. Rather, is a case involving broad cross-functional strategic business issues. All segments of the company's value chain can be integrated into the case analysis: product development and design, production, marketing, pricing, promotion, distribution, and customer service. Therefore, *Balancing the Corporate Scorecard* can be used in a wide variety of courses or seminars, including

[1] Harvard Business School Publishing, 800-545-7685, www.hbsp.edu, product number 2271. HBS Publishing will send instructors one free copy of the software and one Facilitator's Guide. Additional student copies are $19 per CD.

- A traditional MBA class, with assignments spread out over several weeks,
- A one- or two-day experiential learning exercise within an executive accounting, finance, or management MBA class, or
- An upper level business or accounting course.

Prerequisite knowledge

Students should have a basic knowledge of business strategy, marketing strategy, financial analysis, balanced scorecard, and value chain concepts. In addition, the case analysis can include all the following concepts:

1. Organizational strategy
    - Generic strategies (Porter, 1985)
    - Head to head competition strategies (Cooper, 1995)
    - Value chain strategies (Shank and Govindarajan, 1993)
    - Balanced scorecards for strategic management (Kaplan and Norton, 1996)
2. New product design and development
    - Market assessment and customer needs assessment
    - Product design efficiency and effectiveness measures
    - Technology resource management
3. Product production
4. Marketing
    - Product release readiness and new product introduction
    - Product pricing; impact of pricing on sales and profitability, and price elasticity
    - Market segmentation; product mix; customer characteristics
    - Competitor analysis
    - Market trend analysis; market share analysis
    - Revenue growth and revenue gap analysis
5. Distribution
    - Lead time, cycle time, backlog
6. Customer service

- Pre-introduction and post-sale measures of customer satisfaction
- Customer service performance measures, including customer service backlog, customer service lead time, and customer service productivity

7. Finance and accounting concepts
    - Fundamental income statement concepts including revenues, expenses (variable and fixed), profit, profit margin percent, and revenue growth

Students do not have to be experts the concepts shown above, but they should have had some exposure to them. Otherwise, the facilitator should assign supplemental reading materials. If the case is assigned to teams, then heterogeneous team membership should help provide team expertise in a wide range of these concepts.

Prereading materials

The case materials herein include a reading list may be used for those who need/desire a review of the fundamental prerequisite knowledge.

Teaching aids

The teaching aids herein include detailed instructions for the student, instructions for using the software, a complete set of “good” solutions, and a spreadsheet template that can be used for documenting the balanced scorecard strategies and results.

CASE OVERVIEW

Balancing the corporate Scorecard 2.0 provides an active learning environment for the study of balanced scorecard concepts. Other business strategy and performance measure concepts are also reinforced in the case.

The simulation puts the participants in the position of president of Sentra Software, Inc. (a hypothetical company). Sentra, a subsidiary of a large software development company, has been experiencing financial difficulty in the last six quarters. The students are given the position of the newly hired president of the subsidiary. The charge from the CEO of the parent company is to grow the business and improve profitability by concentrating on one customer segment. Students are provided a rich set of company and industry information including audio and video background information (see the *Background* in Figure 1).

The simulation is an excellent tool for learning through experience. The best learning comes when the participants experiment with alternative scorecards. When they make mistakes and fail, the software detects the nature of their errors and provides immediate feedback. When their mistakes are minor (and forgivable), they receive memos or voice messages from their CEO or their colleagues. They also receive tutorial audio and video aids from the simulation software. When their mistakes are significant, their boss fires them, and they have to begin the simulation again.

Figure 2 shows the control panel that serves as the scorecard. Figure 3 shows all the possible metrics that could be used in the scorecard. Figure 4 shows a process flow chart that can be used to evaluate the value chain linkages. Participants must understand these linkages in order to select both leading and lagging scorecard metrics for their scorecard.

The detail instructions included in this case supplement will guide participants through the following steps in building a balanced scorecard and using the scorecard to run the company.

- Prereading material assignment (not graded).

- The first assignment requires the participants to become familiar with the software, review of the company background and business environment, and practice simulation sessions (not graded).
- The second assignment requires the participants to document the results and describe the learning process. This assignment includes (1) describing the objectives, strategies, and metrics they decided to use in the simulation, (2) explaining how their objectives and metrics are linked together into a coherent strategy, (3) using the Scorecard framework to "tell the story" of the company's strategy, and (4) documenting the decisions made and the metric measures after the decision for each quarter.
- The third assignment requires participants to prepare a summary report and prepare answers to discussion questions.

Resource requirement

Facilitators may purchased a quantity of the CDs and loan these to the students. Alternatively, the facilitator could require that participants purchase their own software. Delivery takes several days, so advanced planning is required.

Students' estimated time to complete

- It should take the participants two-to-three hours to become familiar with the software operations and the background of Sentra Software, Inc.
- It should take about four hours to run five-to-ten trials. By the end of this process, the participant should have completed a "successful" simulation.
- Documentation of the results could take four or more hours. The facilitator may shorten this portion of the assignment by requiring only summary graphics to supplement class discussion.

Learning objectives

- To learn that balanced scorecard measures are more than nonfinancial performance measures.
- To lean how the balanced scorecard tells the story of a business's vision and strategy from four perspectives: financial perspective, customer perspective, internal business process perspective, and learning and growth perspective.
- To learn how to determine the interrelationships between an organization's value chain activities, and to learn how to design a scorecard that measures and monitors the cause and effect feedback loops within those value chain activities.
- To learn the difference between lead metrics and lag metrics.
- To provide an experiential environment to learn about the value chain linkages over time, i.e., to discover by experience (and empirical evidence) that hypothesized linkages actually exist.
- To learn that a scorecard should evolve over time, thereby avoiding the problem of attempting to discover the "perfect" scorecard on the first try.
- To learn by experience in a time-compressed business simulation.

COURSE MATERIALS HANDED TO STUDENTS

Prereading list

- The following business strategy readings would be useful background:
  - Chapter 1 of Porter (1998), *Competitive Advantage: Creating And Sustaining Superior Performance* (reproduced on-line at www.simonsays.com.
  - First 4 chapters (86 pages) of *When Lean Enterprises Collide* [Cooper, 1995]
  - The first 10 chapters (166 pages) of, *Strategic Cost Management: The New Tool for Competitive Advantage*, [Shank and Govindaragin, 1993].
- In addition to the business strategy readings, students should be exposed to the fundamentals of the balanced scorecard approach. The following textbooks have good coverage:
  - *Advanced Management Accounting*, Kaplan, R., and Atkinson, A., 3rd ed., 1998, Prentice Hall, chapter 8.
  - *Cost Management: Accounting and Control*, Hansen, D. and Mowen, M., South-Western College Publishing, 2000, chapter 14.
  - *Cost Accounting: A Managerial Emphasis*, Horngren, C., Foster, G., and Datar, S., Prentice Hall, 2000, chapter 13.
  - *Cost Management: A Strategic Emphasis*, Blocher, E., Kung, C., and Lin, T., Irwin McGraw-Hill, chapter 19.
  - *Cost Accounting, Creating a Value for Management*, Maher, M. McGraw-Hill Higher Education, 1997, chapter 22.
  - *Introduction to Management Accounting*, Horngren, C., Sundem, G., and Strattaon, W., Prentice Hall, 1999, chapter 9.
  - *Management Accounting: A strategic Approach*, Morse, W. Davis, J., and Hartgraves, A., 2 ed., 2000, South-Western College Publishing, chapter 13.
  - *Management Accounting*, Hansen, D. and Mowen, M., South-Western College Publishing, 2000, chapter 10.

Getting Started

The CD-ROM contains everything you need to know to run the simulation. Even so, the following instructions will help reduce the start-up frustrations that sometimes accompany computer-based learning experiences. Students should read through this document carefully to assure a smooth start.

Read the instruction booklet that accompanies the CD-ROM (inside the jewel case). Refer to these instructions as you run the simulation. Here are some reinforcements we find useful:

- You MUST install Quicktime 4.0. If you have an earlier version of Quicktime, it is best if you uninstall it first. RealPlayer® will not play the videos in this CD.
- Minimum System Requirements: 24X CD reader can load the program in about two minutes. With a slow CD reader, loading could take up to eight minutes.
- If you have room on your hard drive to copy the entire CD, the simulation will run faster; copy entire disk to a directory; change the properties of the .exe files so that the program runs from the directory you just created.

Technical Support

When you encounter a problem call (we use a graduate assistant phone number and/or our office phone), or e-mail Professor xyz. Or try technical support at High Performance Systems, Inc., 603-643-9636, Fax 603 643 9502, or e-mail support@hps-inc.com.

Assignment 1

Load the program on a PC and run the program by double clicking the BSC icon. At the *Main Menu* you will see several choices. There are only two that you need to use: *Play* and *Quit.* Under *Play*, there are two options: *New* and *Saved*. Choose *New* for your first simulation.

As you work through the program, play the introduction from Phil and the *Welcome* from your boss, Steve Tucker. After playing the welcome video, review the *Background* information. All the information in the background section is important. Take notes and/or print copies.

After reviewing the background information, *Run Sentra*, *Learn the Control Panel*, and *Run the Company.*

This simulation is designed to be hands-on, learning by trial. So during this first week, don't worry about getting fired. You will get fired often. That is expected. In fact, the program is designed to be very unforgiving in the early quarters of the simulation, and the learning process comes from making mistakes.

Don't spend more than four hours on the simulation during this first week (unless you are really having fun.). Next week, your instructor will provide a timeline for completion of the project and give you some background information on the Balanced Scorecard concept.

Assignment 2

Complete the steps in the balanced scorecard process: (1) assess strategy from the four perspectives, (2) revise strategy, (3) select metrics. Perform this process as if it is the beginning of the simulation (quarter 1, year 1). Below is an example of a table that may be used to provide a view of the big picture at a glance. Fee free to use this format, or use any other format you feel comfortable with.

Balancing the corporate scorecard (an example for a hypothetical company);
Green = lead metric; Red = lag metric

Mission	Goals and objectives	Strategies/initiatives to accomplish goals	Performance Measures
Produce the best quality ink jet printer for home and home-office use	*Financial* • Become one of the top 10 financial performers in the ink jet industry	Growth in sales with very low overhead	• Net income of $6 gazillion
	Customer Command the home and home-office market	Make a ink jet that has a the smallest footprint of all competitors; other features comparable to competitors	• Footprint-shrinking ideas on the drawing board • Square inches in footprint of final product • Number of positive PC magazine top-ten ratings
	Internal processes	Lowest manufacturing overhead in the ink jet industry	• Part reduction ideas in the design stage • Cycle time below 60 minutes
	Learning and growth	Create a happy, employee oriented organization	Employee training satisfaction measures Employee turnover

Assignment 2 (continued)

1. Describe the objectives, strategies, and metrics you used on your most successful simulation run. Explain why you selected the objectives and how they link together into a coherent strategy. You should be able to use the Scorecard framework to "tell the story" of the company's strategy.
2. Document your decisions for each period during at least one simulation. Include your metrics and their resulting measures after each decision. Don't be concerned if your simulation crashed prior to the 16th quarter. The documentation and the results are the learning process we want to document.
3. If you crashed before the 16th quarter, describe why you believe you failed
4. If you successfully ran the company through the 16th quarter, describe what might you do again to improve your performance.

Here is an example of a table you can use to track your results:

			Metric measure after quarterly decision											
			Financial			Internal process			Customer			Learning & Growth		
Qtr	Decision	Rationale												

Assignment 3

Prepare a summary report (six pages maximum). Include at least one graphical metric presentation (i.e., a chart or graph that summarized metrics). Include a brief statement explaining why you feel the graphical presentation is particularly useful.

Submit a report that addresses assignments 1, 2, and 3. In addition, be prepared to discuss the following questions.

1. What is the company's overall business strategy. Is there a single generic strategy, or does Sentra compete head-to-head with other lean producers?
2. What are the linkages between the company's strategies/vision, the value chain activities, and your team's balanced scorecard metrics? How do you know that your metrics use the double feedback loop? Which of your team's metrics are lead and which are lag indicators?
3. "Why is it important to begin investing more aggressively in IT several quarters before introducing an ease-of-use product?" [*Facilitator's Guide, 14]*
4. Should dashboard metrics change over time, or can you select metrics that will always work? Did your team's metrics change as the market changed? Why or why not? What kinds of metrics might be universally useful (for all time) and what kind of metrics might be useful only in certain market/environmental conditions?
5. "Steve Tucker was committee to a "stick to the knitting" strategy for Sentra. If Tucker could select one of two metrics whose values over the first year of the simulation best supported his position, what do you think they would be and why?" [*Facilitator's Guide, 13]*
6. At the outset of your tenure as CEO, what metrics indicated that it make more sense to invest in training for customer service reps than it did to hire additional reps? Why wouldn't you do both simultaneously? [*Facilitator's Guide, 14]*
7. During the transition, while developing a first ease-of-use product, what role do consultants play? Would the consulting lead-time metric have indicated whether Sentra had adequate consulting resources during this phase? If not, which metric

would have shown this? [*Facilitator's Guide, 14]*

8. What is Sentra's business strategy: price leadership, differentiation, or head-to-head competition with other lean enterprises?
9. Did you observe diminishing marginal returns in any of the spending or investment efforts that you used to support your business strategy?

REFERENCES

Balancing the Corporate Scorecard 2.0, High Performance Systems, Inc. and Harvard Business School Publishing, 1999.

Blocher, E., Kung, C., and Lin, T., Cost Management: A Strategic Emphasis, Irwin McGraw-Hill

Cooper, R., *When Lean Enterprises Collide* (Harvard Business School: Boston, MA, 1995).

Facilitator's Guide for Balancing the Corporate Scorecard 2.0, High Performance Systems, Inc. and Harvard Business School Publishing, 1999.

Kaplan, R. S., and D. P. Norton, *Balanced Scorecard: Translating Strategy into Action*, Harvard Business School Publishing, 1996.

Kaplan, R. S., and D. P. Norton, *Balancing the Corporate Scorecard 2.0, An Interactive Simulation*, Harvard Business School Publishing, 1999.

Kaplan, R., and Atkinson, A, Advanced Management Accounting, 3rd ed., 1998, Prentice Hall.

Hansen, R, and M. M. Mowen, *Cost Management: Accounting and Control*, Cincinnati, OH: Southwestern, 2000.

Hergert, M. and D. Morris, Accounting Data for Value Chain Analysis,? *Strategic Management Journal* (V. 10, 1989), pp. 175-188.

Horngren, C., Foster, G., and Datar, S., Prentice Hall, 2000, Cost Accounting: A Managerial Emphasis.

Horngren, C., Sundem, G., and Strattaon, W., Introduction to Management Accounting, Prentice Hall, 1999.

Maher, M., Cost Accounting, Creating a Value for Management, McGraw-Hill Higher Education, 1997.

Morse, W. Davis, J., and Hartgraves, A., Management Accounting: A strategic Approach, 2 ed., 2000, South-Western College Publishing.

Partridge, M., and L. Perren, Cost Analysis of the Value Chain: Another Role for Strategic Management Accounting,? *Management Accounting* (UK) (July/August 1994), pp. 22-26.

Porter, M. E., *Competitive Advantage: Creating And Sustaining Superior Performance*, The Free Press, New York. 1998; chapter 1 reproduced at www.simonsays.com

Shank, J. K., and V. Govindarajan, *Strategic Cost Management: The New Tool for Competitive Advantage* (New York: The Free Press, 1993).

Alternative Chargeback Systems for Shared Services at The Boeing Company: The Case of Voice Telecommunication Services

Abstract

A multidivision corporation that uses a shared services organization to provide common services must develop billing systems to charge the costs of these services back to using departments. This case illustrates how a simplified system, based on a single chargeback rate, results in charges that are unrelated to the use of services. An activity-based system is then shown to produce cost assignments that reflect the actual consumption of services. The case illustrates the behavioral impact alternative chargeback systems can have on users of internally-provided services. It also demonstrates how the need for more accurate information must be balanced against the added cost of providing this information.

William R. Ortega
Assistant Professor of Accounting
College of Business and Economics
Western Washington University
Bellingham, WA 98225-9071
Phone: (360) 650-7735
Fax: (360) 650-4844
bill.ortega@wwu.edu

Introduction

The grumbling had gone on for months. Managers kept complaining that their monthly charges for voice telecommunication services didn't reflect the amount actually consumed. Consequently, there was a movement to reinstate detailed billing to support the monthly charges and the process to implement an activity-based chargeback system was proceeding full steam ahead.

Mike Burton, Manager of Accounting Policy at The Boeing Company, wasn't sure the new activity-based system was the answer. He recalled that four years earlier Boeing had abandoned a detailed activity-based chargeback system because too much detail was being provided and the cost associated with providing the detail wasn't justified. Although the consumption of voice telecommunication services had increased dramatically over the past four years, Mike wasn't sure whether the increase was due to the use of the simplified chargeback system or whether it was due to changes in technology.

Mike had more questions than answers: How distorted were the cost allocations generated by the existing system? Were employees overconsuming voice telecommunication services because the existing system failed to charge them for it? Would the added cost of the proposed activity-based system be offset by reductions in consumption? What role should the chargeback system play in influencing employee behavior?

The Boeing Company and the Shared Services Group

The merger with McDonnell Douglas (effective August 1, 1977) made Boeing the largest aerospace company in the world. With 1997 revenues exceeding $45 billion, Boeing is the world's largest manufacturer of commercial and military aircraft, and is the nation's largest NASA contractor.

Introduction

The grumbling had gone on for months. Managers kept complaining that their monthly charges for voice telecommunication services didn't reflect the amount actually consumed. Consequently, there was a movement to reinstate detailed billing to support the monthly charges and the process to implement an activity-based chargeback system was proceeding full steam ahead.

Mike Burton, Manager of Accounting Policy at The Boeing Company, wasn't sure the new activity-based system was the answer. He recalled that four years earlier Boeing had abandoned a detailed activity-based chargeback system because too much detail was being provided and the cost associated with providing the detail wasn't justified. Although the consumption of voice telecommunication services had increased dramatically over the past four years, Mike wasn't sure whether the increase was due to the use of the simplified chargeback system or whether it was due to changes in technology.

Mike had more questions than answers: How distorted were the cost allocations generated by the existing system? Were employees overconsuming voice telecommunication services because the existing system failed to charge them for it? Would the added cost of the proposed activity-based system be offset by reductions in consumption? What role should the chargeback system play in influencing employee behavior?

The Boeing Company and the Shared Services Group

The merger with McDonnell Douglas (effective August 1, 1977) made Boeing the largest aerospace company in the world. With 1997 revenues exceeding $45 billion, Boeing is the world's largest manufacturer of commercial and military aircraft, and is the nation's largest NASA contractor.

Boeing employs more than 238,000 people in 27 states and has three major operating locations: Puget Sound area in Washington state, St. Louis, and Southern California.

The company has two main operating divisions. The Commercial Airplane Group (BCAG) produces the jetliners that most people are familiar with (e.g., 737, 747, 757, and 777). As a result of the merger, Boeing is now responsible for over 10,000 of the 12,000 commercial airplanes in operation worldwide. BCAG's 1997 revenues were approximately $27 billion.

The other division is the Information, Space & Defense Systems Group (ISDS). ISDS consists of a broadly diversified collection of operations, including the production of: military aircraft and missile systems such as the joint strike fighter; space transportation such as the space shuttle; and information and communication systems such as the global positioning system. No single program accounts for more than 15 percent of the division's 1997 revenue of $18 billion.

Boeing provides common services to the operating divisions by utilizing a shared services concept. By consolidating common functions under a common provider, Boeing has found that redundancies are eliminated. This, in turn, lowers costs and increases customer satisfaction. The Shared Services Group (SSG) within Boeing has the responsibility for providing a broad range of common services to the operating divisions. Eighty-seven different services are provided, ranging from mail service to voice telecommunication services (referred to as voice services, hereafter).

The voice services "family" provides all electronic communications throughout the company. This includes the entire range of components from the infrastructure directly supporting voice services to the end-user devices that attach to the network. Voice services is an end-to-end service that provides requirements analysis in the beginning of the life cycle, carries through to the design, implementation, operation, and maintenance of voice services, and concludes with the retirement of all voice-related

components. The elements of the service are shown in Table 1. The cost to provide voice services exceeded $87 million in 1998.

1995 Billing Simplification

In 1994, a companywide movement to simplify the billing processes between SSG and its internal customers was undertaken because it was widely believed that too much detail was being provided at too low a level within the organization. Consequently, beginning in 1995 the chargeback procedures used for SSG's services were reviewed and many of them were simplified.

Prior to 1995, voice costs were billed to 421 different organizational units (e.g., budgets) using 29 different rates. Each voice service had its own rate that was calculated using a separate cost pool. The result of billing simplification on voice services was to combine the 29 voice-related cost pools into a single pool. These costs were then allocated to internal customers on the basis of salaried employees. Salaried headcount was chosen as the allocation base because it was viewed as the most significant "driver" of voice telecommunication costs. In the new system, voice costs were billed at a high level, with 24 organizational units receiving monthly voice cost allocations. In 1995, the rate was $76.84 per month. By 1998, the rate had increased to $91.84 (see Table 2 for the 1998 Voice Telecommunication Budget and the calculation of the 1998 rate).

The simplified billing procedure for voice services saved Boeing several million dollars a year in labor and non-labor costs. Within SSG, the new billing procedure eliminated some of the computer systems needed to track end-users' budget numbers and eliminated over 50 percent of the routine reporting currently being done. The savings for SSG were estimated to be $1.4 million a year.

Similarly, internal customers were believed to save from billing simplification. Most of these savings were considered "soft" and were estimated to be $2.7 million for ISDS and $4 million for BCAG.[1]

During the simplification process, many managers raised concerns regarding the lack of detailed reporting associated with the simplified system. They believed that if voice costs were billed at one average rate customers would overconsume voice services. For example, some managers were concerned that everyone would buy cell phones and pagers because it would not affect their monthly cost allocation. Other managers were concerned that eliminating the detailed long distance call records would result in increased usage because employees would conduct personal business at work.

The problem of overconsumption of services was to be controlled by establishing a companywide Voice Standards Board that developed uniform standards and policies for the use of voice services. These policies were based on "business needs" and were to alleviate superfluous consumption of voice services. For example, a person could have a cell phone only if there was a bona fide business reason to have one. To curb the possible abuse of long distance services, detailed phone records could be generated, but only on an exception basis.

The philosophy of the simplified chargeback system was that SSG was responsible for managing the cost of telecommunication services as a whole (i.e., providing the required level of service at the lowest cost) and the customer was responsible for managing the consumption of services. However, the consumption of services was managed through standards and policies, rather than by detailed reports generated by the accounting system.

---

[1] Cost savings were viewed as either "hard" or "soft." Hard savings were savings items that could be easily measured, such as headcount and computer time reductions. In contrast, soft savings were productivity-improvement items that were more difficult to quantify. For example, attending fewer meetings, reducing the time spent reviewing reports, and answering fewer questions from customers.

When the simplified system was adopted, it was widely believed that the cost savings (both hard and soft) outweighed the fact that the new system was a reversion from an activity-based system that assigned costs on a causal basis to a simplified system that allocated costs using one average rate.

1999 Voice Billing Changes – A Return to Detailed Billing

The conversion to the simplified chargeback system went smoothly. Unfortunately, it did not take long before the complaints started. Many complaints centered on the belief that charging voice services at one average rate per salaried employee has led to the overconsumption of services. Managers with this viewpoint feel that the standards and policies developed by the Voice Standards Board have not worked as originally intended and that the consumption of services has gone unimpeded. They point to the growth of voice services consumed during the last four years as support for their opinion (see Table 3). Other managers view the growth in voice services as being related to changes in technology. They suggest that it's normal to see significant growth in pagers and cell phones because these are tools, just like personal computers, that employees now use to conduct their jobs.

Managers who believe the existing system has overcharged them have leveled complaints too. Many of these same managers are also under pressure to reduce costs. They are dissatisfied with the inability to reduce their monthly voice charges by reducing their consumption of services. For example, Jim Ryan, Manager of Boeing's Huntsville Operation, has been furious with the magnitude of his voice charges. He contends the existing system overcharges him by at least 200 percent. Ryan is also attempting to slash his 1999 operating costs and has set aggressive consumption reduction goals for the upcoming year. He would like to see a chargeback system implemented that would translate reductions

in services into reduced charges (see Table 4 for the current and proposed consumption levels of voice services by the Huntsville Operation).

The complaining has resulted in the development of a proposed chargeback system that will assign costs on a cause-and-effect basis using multiple "activity-based" rates. Customers will be billed based on the quantity of the specific services used. The quantity of each voice service consumed will be multiplied by the chargeback rate per service to obtain the total cost of the specific service. Consequently, customers will pay for the voice services they actually consumed. The proposed activity-based system will look as follows:

- Companywide pools and rates for basic dial tone service. Two rates (analog and digital) will be used. Costs will be assigned on a per-phone-line basis.
- Companywide pools and rates for long distance charges. Two rates (domestic and international) will be used. Costs will be assigned on a per-minute basis.
- One companywide pool and rate for voice mail. Costs will be assigned on a mailbox basis.
- Companywide pools for pagers. Different rates for three pager types (standard, alphanumeric, and national). Costs will be assigned on a per-pager basis.
- Regional pools and regional rates for add, move, and change services. Separate rates will be used for each service offered. Costs will be assigned based on the number of service orders for these services.
- Regional pools with regional rates for cellular phone service. One rate will be used and costs will be assigned on a per-phone basis.
- Services that are unique or nonstandard will be billed directly to the using department at the cost of the service plus administrative charges. Fax machines are an example of items included in this category.

Table 5 shows the proposed activity-based rates using the 1998 budgeted costs and the 1998 annualized level of the activity drivers.[2] The rates shown in Table 5 are preliminary rates developed to help assess the impact of adopting the activity-based system. All of the rates shown in Table 5 are calculated on a companywide basis, even though the final system will use both companywide and regional rates, as noted above.

The philosophy of the activity-based chargeback system is that SSG will be responsible for managing the unit cost of the individual voice services and the customer will be responsible for managing the consumption of services. The consumption of services will now be monitored through detailed reports generated by the chargeback system. In contrast to the simplified chargeback system, users will now be charged for the services actually consumed.

Unfortunately, this new philosophy cannot be implemented for free. Many of the savings (both hard and soft) that accrued from billing simplification would be eliminated. For SSG, the cost to develop and implement the detailed billing system is estimated to be $700,000. Ongoing support of the developed systems, including maintenance of charging accuracy is estimated to be $1,200,000 per year. Similarly, the cost savings enjoyed by BCAG and ISDS from billing simplification will be eliminated when detailed billing is resumed.

[2] To develop rates, activity-based cost systems must translate the organization's general ledger into the cost of activities performed. In this case, the activities performed correspond to the various voice services provided. Many of the costs associated with these services were already captured in Boeing's accounting system by budget code (see Table 1). This facilitated the development of the service cost pools shown in Table 5.

Table 1

Voice Telecommunication Services

Voice Processing:

- Voice mail
- Voice response units/interactive response
- Call management systems

Voice Networking:

- Basic telephone service
- Access to local telephone service
- Long distance service

Component Products:

- Station telephone products
- Audio conferencing equipment
- Secure products
- Telephone directories

Personal and Independent Products:

- Cellular services
- Pager services
- Emergency satellite
- Facsimile machines
- Calling cards

User Services:

- Operator services
- Call assistance
- In-flight emergencies
- Teleconferencing support
- Add, move, and change for new and existing service
- Voice consulting

Table 2

1998 Voice Telecommunication Budget and Chargeback Rate

1998 Voice Telecommunication Budget:	
Local Service Lines	$17,643,517
Voice Mail	2,144,597
Voice Equipment	4,634,000
Pagers	3,156,000
Facsimile Machines	976,741
Cellular Phones	1,757,115
Domestic Long Distance	5,045,496
International Long Distance	3,900,000
Other Toll Services	1,440,000
Telecommunication Services Support	708,909
Design and Build	1,533,277
Add, Move, and Change	18,347,355
Operate, Sustain, and Repair	4,688,082
Common Product Support	10,836,152
Use and Occupancy	701,629
Taxes	4,791,939
SSG Administration	2,385,184
Other Administrative Costs	2,758,934
Total	$87,448,927
1998 Salaried Workforce:	
Annualized Basis	952,188
Monthly Rate Per Salaried Employee:	
$87,448,927 ÷ 952,188 = $91.84	

Table 3

Salaried Workforce Levels and Voice Telecommunication Services Provided From 1995 Through 1998

Panel A: Salaried Workforce and Services (Volume Measure)	**1995**	**1996**	**1997**	**1998**
Salaried Workforce (Number)	69,548	72,780	72,801	79,349
Phone Lines – Analog (Number)	114,096	122,329	129,449	135,068
Phone Lines – Digital (Number)	11,277	12,085	13,402	15,412
Voice Mailboxes (Number)	36,100	52,369	75,118	86,515
Domestic Long Distance (Minutes)	58,751,676	63,697,616	71,254,928	75,052,500
International Long Distance (Minutes)	6,160,670	6,472,006	6,742,060	7,299,221
Cellular Phones (Number)	913	1,556	2,458	2,950
Pagers – All Models (Number)	14,400	21,400	34,641	40,355
Add/Move/Change (# of Orders)	119,211	146,040	185,880	217,187
Facsimile Machines (Number)	2,180	2,319	2,684	2,713

Panel B: Percent Increase	**Cumulative Increase 1995-1998**	**1995-96**	**1996-97**	**1997-98**
Salaried Workforce (Number)	14.09%	4.65%	0.03%	8.99%
Phone Lines – Analog (Number)	18.38%	7.22%	5.82%	4.34%
Phone Lines – Digital (Number)	36.67%	7.17%	10.90%	15.00%
Voice Mailboxes (Number)	139.65%	45.07%	43.44%	15.17%
Domestic Long Distance (Minutes)	27.75%	8.42%	11.86%	5.33%
International Long Distance (Minutes)	18.48%	5.05%	4.17%	8.26%
Cellular Phones (Number)	223.11%	70.43%	57.97%	20.02%
Pagers – All Models (Number)	180.24%	48.61%	61.87%	16.49%

Add/Move/Change (# of Orders)	82.19%	22.51%	27.28%	16.84%
Facsimile Machines (Number)	24.45%	6.38%	15.74%	1.08%

Table 4

Current and Proposed Consumption of Voice Telecommunication Services by the Huntsville Operations

(All Data on a Monthly Basis)

	1998 Actual	1999 Proposed
Salaried Workforce	796	796
Phone Lines – Analog	814	814
Phone Lines – Digital	101	101
Total Phone Lines	915	915
Domestic Long Distance	187,332	89,206
International Long Distance	1,892	901
Total Minutes	189,224	90,107
Voice Mailboxes	796	637
Cellular Phones – Number	150	15
Pagers – Standard	698	228
Pagers – Alphanumeric	12	4
Pagers – National	145	47
Total Pagers	855	279
Add, Move, and Change	66	33
Facsimile Machines	52	26

Table 5

Proposed Activity-Based Rates for Voice Telecommunication Services

Telecommunication Service	Service Cost Pool	Annualized Level Of Cost Driver	Monthly Rate
Phone Line – Analog	$38,488,444	1,620,816 lines	$23.75 per line
Phone Line – Digital	$6,414,739	184,444 lines	$35.68 per line
Voice Mailbox	$2,711,124	1,038,180 mailboxes	$2.61 per mailbox
Domestic Long Distance	$7,412,085	75,052,500 minutes	$.10 per minute
International Long Distance	$4,671,503	7,299,221 minutes	$.64 per minute
Cellular Phone	$2,015,485	35,400 cell phones	$56.94 per cell phone
Pager – Standard	$876,439	254,856 pagers	$3.44 per pager
Pager – Alphanumeric	$1,661,278	196,404 pagers	$8.46 per pager
Pager – National	$1,126,327	33,001 pagers	$34.13 per pager
Add, Move, and Change	$20,840,927	217,187 service orders	$95.96 per order
Facsimile Machine	$1,230,576	32,556 fax machines	$37.80 per fax machine
Total Annual Voice Budget	$87,448,927		

USC
UNIVERSITY
OF SOUTHERN
CALIFORNIA

Marshall School of Business

University of Southern California

A201-02

ConAgra Grocery Products Company

In January 1999, managers at ConAgra Grocery Products Company (CAGP) revamped their system of allocating and controlling trade-marketing spending. CAGP annually spent over $400 million on trade marketing expenditures—expenditures aimed at helping grocery retailers promote CAGP's products. Because of the size of the expenditures and the impact they had on the success of the business, CAGP managers were understandably concerned as to whether that money was allocated wisely. They were also concerned about their controls over trade spending because the company had recently overspent its trade-spending budget.

Among the major changes in the new system were the giving of increased responsibility for allocating trade spending dollars to the sales organization, the assignment of volume-variable budgets called "case rates" (rather than fixed dollar budgets), a lengthening of the budget period (to semi-annual rather than quarterly periods), the creation of a new customer marketing manager role to improve communications between the marketing and sales organizations, and modifications to the incentive systems that were designed to induce sales personnel to pay more attention to cost control.

In late 1999, Ken Sobaski, president of CAGP's Grocery Products Brand Company, reflected on the system changes:

> At its highest level, this change is all about trade marketing managers giving up some control and empowering field sales managers, giving them more flexibility and responsiveness in meeting the needs of their customers. Our assumption is that by pushing funding control out closer to the customer, with greater lead time and better planning and strategic direction from headquarters, we will be more effective and efficient with our spending.

Company History and Background

CAGP was a subsidiary of ConAgra Inc. ConAgra, headquartered in Omaha, Nebraska, was one of the largest food conglomerates in the world (fiscal year 1999 sales of almost $25 billion; 85,000 employees). ConAgra's businesses operated across the entire food chain. Its products included fertilizers, crop protection chemicals, and seeds for farmers; food ingredients, such as flour and spices, for manufacturers; and a wide range of branded products for consumers, including shelf-stable and frozen foods, meat and fish products,

Professors Kenneth A. Merchant and Research Assistants Lay Khim Ong and Liu Zheng wrote this case as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

tablespreads, cheeses, and dessert toppings. ConAgra was a successful company. Its 19 consecutive years of earnings-per-share growth at an annual rate of 14.6 percent was unequaled by any major food company.

CAGP, formerly Hunt-Wesson, Inc., was one of 11 major operating companies in ConAgra. CAGP was founded by the Hunt Brothers in 1890 as a canning business in Santa Rosa, California. CAGP's current headquarters were in Fullerton, California. CAGP was itself a large business with over 8,000 employees nationwide and annual sales of $2.5 billion.

CAGP's mission was to provide "the finest-quality and best-tasting products to consumers." The company operated manufacturing plants, distribution centers and sales offices in more than 30 states across the United States. CAGP produced, marketed, and sold a wide variety of products, including tomato paste and sauces, canned tomatoes, ketchup, pasta, barbecue sauces, soups, cereals, chili, canned beans, canned beans and weiners, sloppy joe sauces, meat snacks, peanut butter, popcorn products, puddings, fruit snacks, gels, cooking and salad oils, Oriental and Mexican foods, hot cocoa mixes, bread mixes, flour, grain snacks, dry beans, peas, lentils, rice, ground black pepper, preserves, jams, jellies, syrups, cookies and salad dressings. Among the company's 17 food brands were Hunt's, Wesson, Orville Redenbacher's, Peter Pan, Van Camp's, Swiss Miss, Knott's Berry Farm, Chun King, La Choy, and Rosarita.

CAGP sold to more than 300 customers ("buying points"). But the largest 7-10 customers (e.g., Wal-Mart, Kroger, Albertson's) accounted for over half of the total sales volume.

Organization Structure

Since April 1999, when a major reorganization was made and a new management team took over, responsibility for the U.S. grocery business was divided between Ken Sobaski, who was responsible for marketing, and Doug Knudsen, who was responsible for sales. CAGP's organization chart is shown in **Exhibit 1**.

Ken Sobaski, president of the Grocery Brands Company, was head of the marketing function for products sold in the United States through grocery store outlets. Ken's organization (see **Exhibit 2**) encompassed brand marketing, trade marketing, and customer marketing. The *brand marketing* managers were responsible for consumer promotion, advertising, market research, packaging, brand strategy, and the overall profit-and-loss management of each of the brands. The brand marketing organization was organized into four SBUs: ingredients, snacks, meals, and functional foods.

The trade marketing and customer marketing organizations both reported to Howard Bowne, VP-trade marketing (see **Exhibit 3**). *Trade marketing* managers developed the national trade strategies and objectives within the volume and case rate parameters established together with brand marketing. The trade marketing managers were responsible for the customer profit-and-loss statements, although their actions really only affected sales volume, sales mix, and trade marketing expenditures.

Customer marketing, a newly created role, provided a liaison between sales and trade marketing. The customer marketing managers helped sales managers plan promotion events within the assigned volume and rate parameters and resolved planning issues with trade marketing. They also identified local market opportunities, assisted account managers in calling on accounts, and educated field sales on brand and trade strategies.

The president of CAGP's *Sales Division* was Douglas Knudsen (see **Exhibit 4**). Each of the five sales vice presidents was responsible for Corporate, Major, or Regional accounts. *Corporate accounts* (e.g., Wal-Mart, Albertson's, Safeway, Kroger) were customers that were corporately owned and spanned across multiple markets. These accounts were centralized and made their purchasing and merchandising decisions at the headquarter levels rather than at the store or geographical level. *Major accounts* (such as Ralphs, Vons) and smaller *regional accounts* were customers that were not corporately owned and that covered a particular limited geographical area.

Reporting to each sales vice president were customer directors who managed the field sales teams and the field sales force. The field sales organization included key account managers (KAMs), account managers (AMs) and regional account managers (RAMs). KAMs and AMs called on the headquarters accounts of corporate or major customers. RAMs called on the headquarters accounts of regional customer teams. The sales force was responsible for the day-to-day management of store-level activity, with the emphasis on securing distribution of new items and selling additional cases of items already being sold.

The profiles of the personnel in the various functions were quite different. The brand marketing personnel were typically MBAs who had concentrated their studies on marketing. Most of the brand marketing personnel, even up to the brand manager level, were quite young (still in their 20s). They had little or no field experience. Most sales personnel were college graduates who had worked their way up the sales organization. Only a few of them had MBAs. The trade marketing organization was less homogenous. It included both some younger, MBA-type personnel and some sales personnel who were doing a stint at headquarters.

These educational and experience differences contributed to a natural tension in the organization. Field sales personnel were reluctant to accept theories from a new, young marketing person. They believed that the marketers' "book learning with no real world experience" did not help them understand how customers really think. The marketing personnel, on the other hand, thought that sales personnel were, in general, too volume-focused and lacked the ability to understand and the number skills to calculate the profit effects of various decisions that might be made.

Business Strategy

The new CAGP management team was changing the company's strategy and the employees' mindsets as to how best to sell the company's products. In the old marketing approach, the focus was on growth. CAGP marketing and sales personnel sought to fill customers' warehouses with CAGP products. They hoped that consumer advertising would pull the product through the warehouses and, if CAGP prices were discounted, that the retailers would pass the discounts on to the consumers, creating larger demand.

Recent results had been disappointing, however. In 1999, unit sales volumes declined slightly from 1998 levels, and CAGP missed its profit target for the first time in 12 years. More ominous was the fact that some of CAGP's share positions and brand equity had been eroding.

The new marketing approach involved more of a focus on the building of brand equity, which meant getting consumers to prefer CAGP products even, potentially, at a higher price. The new approach stemmed from a desire to build a foundation for long-term success and a realization that CAGP was not, and probably would never be, among the lowest cost producers in the industry. Marketing managers were attempting to build the equity of the various CAGP brands through a variety of methods, including product and packaging design and advertising and promotions.

Market Segmentation and Allocation of Trade Spending Dollars

As part of brand and trade strategies aimed at selling products to retailers and, ultimately, to consumers, CAGP managers allocated monies for any or all of four promotion tactics. These were temporary price reductions, major advertisements, coupon advertisements, and displays. *Temporary price reductions* were discounts off the everyday price of an item for a set time period (e.g., a bonus buy). *Major advertisements* and *coupon advertisements* were advertisements run by an account. They could be delivered in-store or via newspaper or direct mail. *Displays* involved prominent placement of in-store stocks, such as at the end of an aisle ("end cap"), an in-aisle stack, a special rack, or a "wall of values." Each display event required a certain dollar allocation.

CAGP's marketing strategy involved the segmentation of markets both to match promotional dollars with geographic opportunities and to better align promotion tactics with important characteristics of the accounts within the designated market. The domestic national market was divided into more than 50 geographical market zones (e.g. Chicago, Seattle, Los Angeles). Then for each brand, trade marketing grouped the market zones into different market segments.

The market segmentation often influenced the amount of trade funds allocated. CAGP's allocations of trade spending dollars had to be tailored both to the brand characteristics and to the grocery retailers' strategies. In considering the brand characteristics, marketing managers asked "What does it take to have competitive performance at the retail level?" Among the relevant factors that had to be considered were market size and growth, competition, brand strengths, and product profitability. For example, CAGP would do most of its promoting of the Van de Camp's pork and beans products in the central and southern portions of the United States where the market potential was larger because per capita consumption was much higher than on the coasts. Sometimes, however, marketing managers made strategic decisions to invest heavily to build the position of new or weak products. And sometimes where they had a dominant market share, they cut their promotional expense because of a belief that there was little to be gained.

Market segmentation varied by brand. For example, the trade marketers responsible for Peter Pan Peanut Butter segmented the market zones into core markets and non-core markets. Core markets provided the highest volume and therefore received the highest concentration of trade marketing funding.

In contrast, the trade marketers responsible for Hunt's spaghetti sauce segmented the brand's markets into four categories: profit contributor, profit maximizer, battlefield, and underdeveloped. *Profit contributors* were market segments in which the CAGP brand already had share leadership and growth was difficult. In such segments, a defend strategy, with moderate trade and marketing funding and with the elimination of inefficient trade promotions, was adopted to maintain market share. *Profit maximizers* were market segments where the business was stable or declining and with little potential for further growth. In such markets, CAGP adopted a maintain strategy, to maintain distribution and share of shelf space, to deliver profitable volume. *Battlefields* were market segments where both a high level of competition and a high growth potential existed. In such segments, an invest strategy, with the highest concentration of trade and marketing funding, was adopted to strengthen the competitive position. In *underdeveloped* markets where brand growth opportunity existed, a growth opportunity strategy was employed to grow share and volume.

The allocation of trade funds also varied with the timing of product consumption. For Orville Redenbacher microwaveable popcorn, for example, many different display events might be needed over the course of a year timed, perhaps to major television-watching periods (e.g., Super Bowl). Another brand might need only two events.

A final factor that had to be considered was differences in the retailers' strategies. The retailers who sold CAGP products employed many different strategies to distinguish themselves from their competitors. Some were high-end retailers, while others operated low cost (e.g., warehouse outlet) stores. Some emphasized consumer memberships, while others did not. Some used "everyday low prices," while others used normally higher prices but featured many temporary special prices. CAGP's marketing and sales managers had to tailor their promotions to the customers' needs because the retailers decided both which products and brands they would promote and when they would offer the promotions.

The Old System of Allocating and Controlling Trade Spending

Up until 1999, CAGP's budgeting process started in January when managers in the corporate trade marketing organization developed national volume objectives and a national trade-spending budget. After top management approved these targets, the trade-marketing managers disaggregated the targets. They established volume objectives and lump sum trade spending budgets by quarter for each of the over 300 grocery buying points.

Trade marketing also set up deal parameters as guidelines for sales when they planned and executed merchandising deals with accounts. Deal parameters could relate to the lowest unit price at which a product could be offered to a customer, the dates of a deal, or the values allowed on the discount coupons retailers ran in their own in-store advertisements. Before implementing exceptions to the established deal parameters, sales managers had to secure the approval of the appropriate trade-marketing manager.

The quarterly spending budgets and parameters usually did not change during the year. Sales personnel had to try to tailor their promotion events to their accounts' needs while at the same time working within the guidelines given to them by trade marketing. If sales personnel identified promotion opportunities that exceeded the account's budget or violated one or more of the deal parameters, they had to obtain approval from trade marketing. As one sales manager explained, "They can't just cut their own special deals. That is grounds for dismissal."

The sales organization had its own planning process. Sales volume quotas were generated by a computer information system that was independent of the system that generated the volume objectives for trade marketing. During the year, the company's and trade marketing's volume targets were held fixed; sales updated theirs.

The incentive compensation systems for trade marketing and sales personnel were quite different. Incentives for trade marketing personnel were based on CAGP profit before tax (PBT) (40% weighting), the profit contribution of the brands managed (20%) and other objectives tailored to the role (40%). In contrast, incentives for field sales personnel were based on sales volume (75%) and CAGP PBT (25%). Target bonuses were generally around 15% of base salary for lower-level marketing personnel and 20-22% for lower-level sales personnel. Managers at higher organizational levels had higher target bonuses. The bonus opportunities were highly leveraged. No bonuses were paid for if targets were not close to being achieved (e.g. 90% of target). Exceeding targets could result in bonus payouts several times the target bonus (e.g. exceeding the target by 5% would sometimes more than double the bonus payout).

Sales personnel were sometimes also offered *spiffs*—special incentives for accomplishment of specific short-term incentives. For example, if the company wished to boost profits or reduce inventories in a given

quarter, sales personnel might be offered a $1,500 bonus if their performance exceeded 105% of their quarterly quota.

Problems with the Old System

CAGP managers did not believe that the old system of allocating and controlling trade-spending dollars was effective. CAGP, in general, had not been meeting its performance targets. A general erosion in the market position of CAGP products suggested that the allocation of trade spending dollars was not optimal, and the recent overspending of the trade spending budgets provided evidence that control of the allocated dollars was ineffective.

The overspending problem was perceived to have two basic causes. First, because sales incentives were based solely on sales volumes, sales personnel were not greatly concerned with staying within the budgeted spending limits. Second, while sales personnel had to secure approval from trade marketing to exceed budget, some of them had learned how to evade the control by biasing their volume estimates in a downward direction. Then, when actual volume was higher than was forecast, overspends were inevitable. A trade marketing manager explained:

> Let's say I allocated $600,000 to use on programs during a given period. Not infrequently, the sales manager would call me and say, "Sorry I overspent. I assumed we would sell 10,000 cases, but we actually sold 20,000 cases. Isn't that great?" My reply was "No that's horrible. Now I've sold 20,000 cases at a discount." Last year, that cost us a 20% spending overrun "by accident." But the sales manager would not be held accountable for the overspend as long as he met his volume objectives.

Considerable tension existed between the marketing and sales organizations. Personnel in both organizations were concerned about whether personnel in the other organization "really had a grasp on what it takes to drive the customers." Some sales personnel felt that it was very tiring and frustrating for them to have to fight for money for promotion events that were ultimately for the company's benefit. The incompatibility of incentives magnified this problem. For example, some trade marketing managers complained that the sales managers "just wanted to sell" irrespective of whether the additional volume generated was profitable or not.

The incompatibility of the volume targets set for the trade marketing and sales organizations caused some problems. For example, some trade-marketing managers were irked that the sales organization could be meeting its volume targets and getting its bonuses even though profit targets were not being met. The opposite situation could also happen, as one sales director explained:

> Sometimes, marketing rejects the opportunity to fund potentially profitable events proposed by a customer because they have already met their national profit objectives. But sales may not have met their volume targets yet!

The old system of allocating and controlling trade spending also aggravated the problems of forward buying and diverting, which are prevalent in the industry. *Forward buying* occurred where accounts bought larger quantities of products being offered at special prices than they could sell during the promotional period. They would then sell the excess inventory to consumers at regular prices after the deal period and obtain a higher profit margin. The accounts knew when the promotions were scheduled, and they sometimes acted so

as to pay the full list price as little as possible. *Diverting* occurred where accounts bought extra product (more than their consumers would buy) at special prices and then sold the product to other accounts that were not offered similar pricing. The accounts were very up-front about this practice. Many had "diverter buyers" who would even openly talk to CAGP (and other manufacturers) and tell them what they were buying.

Both forward buying and diverting were harmful to CAGP. These practices reduced the amount of trade spending that was effectively merchandising the products. Under the old system of allocating and controlling trade spending, sales personnel had little direct incentive to police forward buying and diverting activities by their accounts because bonuses for sales managers were based on volume targets.

New System of Allocating and Controlling Trade Spending

In January 1999, CAGP implemented a new system for allocating and controlling trade spending. The new system involved five main changes. First, the old lump-sum trade spending allocation system was replaced by a new variable allocation system called a *case rate* system. Under the case rate system, the trade promotion funds available for each account increased automatically with an increase in shipments. Trade marketing managers allocated a case rate (e.g., $2.00/case) to the 25 sales teams, and the sales team directors allocated the case rates down to the account (buying point) level.

The budgeted case rate was determined by taking the total planned trade marketing budget for a brand divided by the planned volume expressed in terms of *equivalent cases*. The case equivalencies were needed to adjust for the volumes in the different product package sizes so that cases containing different quantities or sizes could be added for reporting purposes. For example, Orville Redenbacher popcorn was sold in 3-packs and 10-packs. The 3-packs were sold in cases of 12—a total of 36 consumer servings. The 10-packs were sold in cases of 6—a total of 60 servings. Dividing the volume in one package size case by the volume in another created what was called a *conversion factor*. The factor for converting the volume of popcorn in 10-pack cases to 3-pack cases was 1.667 (= 60 ÷ 36). In other words, sales of cases of 10-packs of popcorn were multiplied by 1.667 when comparing them to sales of 3-packs of popcorn.[1]

The actual (realized) case rate was calculated by dividing actual trade spending by actual total shipments. Actual total shipments include promoted as well as non-promoted volume. Sales managers were held accountable for ensuring that the actual case rate did not exceed the budgeted case rate. For example, suppose that Hunt's Spaghetti Sauce had a budgeted brand case rate of $2 per case and that sales planned a promotion event with an account to spend trade dollars at a rate of $2 per case and also provided an account wth a lump sum amount of $2,000. Also assume that the volume sold to the account during the promotion was 1,000 cases and the volume sold to the account outside side promotion period was 1,000 cases. The actual case rate would then be $2 (=1,000 cases*$2/case + $2,000)/2,000 cases).

Many factors could affect the actual case rate. Sales could reduce its realized case rate by including a case cap[2] or a scan event,[3] as opposed to paying on all cases purchased by an account. Using the Hunt's

[1] The volume equivalencies usually were not the same as profit equivalencies. It was not a simple matter to calculate profits by product and customers. For example, larger volume packages usually provided savings on unit packaging costs, but the prices offered a volume discount. CAGP was developing a system to measure profit by product (and customer) and then to communicate those measures to the sales force, but that system was not yet in place.

[2] A case cap was a limit on the amount of promoted product a customer can order. It was used to help control forward buys and diverting.

Spaghetti Sauce example, suppose that sales planned a promotion event and was able to monitor an account's activities to decrease occurrences of forward buy. Under such circumstances, the account might purchase fewer products on deal during the promotion and might purchase more products without the deal. Assume in the example above that the amount of shipments under the promotion decreased to 600 cases (e.g., with a decreased forward buy) and the shipments in the non-promotion period increased to 1,200. Thus the total shipments would be 1,800 cases. Again, if the merchandising funds were spent at a rate of $2 per case and a lump sum amount of $2,000, realized case rate would be reduced to $1.60 (=600 cases*$2/case + $2,000)/1,800 cases).

On the other hand, the realized case rate would increase if there was an unrealistically high volume estimation, a large lump sum payment, or customer forward buying or diverting. For example, suppose an account bought product diverted from another account. In this case, the non-promoted volume that the account would purchase would decrease, perhaps to zero. Assuming the same deal as above, with a purchase of 1,000 cases of promoted product but with zero non-promoted volume, the realized case rate would be $4 (=1,000 cases*$2/case + $2000)/1,000 cases).

The above examples show that by requiring sales to stay within budgeted case rates in effect held sales personnel responsible for tracking all the items (e.g. forward buying, diverting, volume estimates) that could affect the realized case rate.

The second major change encompassed in the move to the new system was to allow the 25 sales teams, rather than trade marketing managers, to set volume and spending objectives for each of the 300+ buying points. This change was important both because it passed significant authority and responsibility to the sales organization and because it ensured that the volume objectives set for sales personnel tied directly to the volume targets set by trade marketing.

The third change was to plan the volume targets and trade spending allocations on a semi-annual, rather than a quarterly, basis. This change was made because quarterly planning was believed to engender a short-term focus. The longer horizon also allowed sales and their accounts more flexibility in planning promotional events. Most events required about 12-15 weeks lead time to implement. At the mid-year point, the original profit plan was not changed; that was committed to ConAgra in February. Many trade promotion tactics could change, however. Trade spending dollars could also be reallocated between brands and accounts.

The fourth change was the creation of a new role: customer marketing manager. The customer marketing managers served as liaisons between the marketing and sales organizations. It was hoped that the customer marketing managers would improve communications and both ease the transition to the new system and relieve the cross-organizational tensions. This new organization was costly, however. The total cost of the new customer marketing organization was in excess of $10 million per year.

The fifth change involved several modifications to the monetary incentives for sales personnel. The bonus plan was changed to emphasize achievement of the overall company objectives. Starting in FY2000, bonuses for sales personnel were based 50% on CAGP PBT (measured annually) and 50% on national cumulative product market share (measured semi-annually). This change was made to align goals, to make everyone feel a part of one company, and to encourage sales personnel to learn the company's profit drivers (e.g., equity value, volumes, margins, costs).

---

[3] A scan event was one in which a per-unit allowance was paid to an account for products **sold to consumers**, i.e. scanned at the check-out.

Second, the criteria to be used in making the annual Performance Planning Appraisals (PPAs) of *sales* personnel, which were used to determine annual salary increases, were changed to include a specific importance weighting on achievement of case rate objectives. The importance weighting placed on achievement of the case rate objectives varies by role, but it was significant. For key account managers (KAMs), for example, the PPAs were 17.5% based on achievement of case rate objectives. A weekly case rate tracking report was produced, and managers paid considerable attention to actual case rates. In recent years, the pool for annual salary increases was approximately 4% of base salaries. Actual increases given to employees were typically in the 2-7% range.

Third, spiffs were discontinued. CAGP managers believed that in many cases spiffs had contributed to bad, excessively short-term oriented business decisions. For example, in one situation, a KAM who earned a quarterly spiff sold at a discount eight months of inventory to a customer who had plans to put up large display advertising. But the display advertising promotion was never implemented.

Fourth, some contests among customer sales teams were offered. For example, at certain times the team with the highest increase in customer profitability would win a contest, and everyone on the team would be awarded a trip.

Remaining Problems and Issues

In general, CAGP managers were pleased with the new system. In particular, they thought that tensions between marketing and sales had eased because the new system had personnel in both organizations working toward the same objectives.

Many still some significant concerns about the new system, however, and some believed that further changes would have to be made. Among the concerns expressed were regarding the increased work and skill load placed on the sales organization, the tendency to make sales personnel conservative in their use of promotions, the lack of customization of the system to significant product, geographical, and customer characteristics, and inflexibilities caused by the still-short semi-annual planning horizon.

The sales organization faced the greatest challenges in adapting to the new case rate system. Many sales managers had been in the field for 20 or 30 years, and up to now they had been primarily volume-focused. They had tended to focus on short-term objectives and getting product in the customers' warehouses. Under the new system, they still had to perform all the tasks they had been performing, and now they were being asked to do more planning and forecasting and to manage budgets—to plan promotional events and arrange deals that stay within the case rates. Some sales personnel struggled with this challenge.

To help the sales personnel, CAGP managers formed a Trade Promotion Effectiveness Team to teach the sales force how to spend promotional monies wisely. The salespeople were being taught how to influence end-user consumption of the products through distribution (i.e., what products are on the retailer's shelf), shelving (i.e., where on the shelf the product was located; eye-level was best); merchandising (e.g., displays, feature advertisements), and pricing (i.e., understanding competition and price points). Some, but not all, sales personnel looked forward to the increased responsibilities and the potential for having more dialogue with trade marketing managers, particularly in the initial stages of trade and brand planning. But some trade-marketing managers thought that the new workload and its challenges were beyond the capabilities of some personnel in the sales organization, even with the new training assistance.

One particular concern of many was that the case rate system was causing sales personnel to be overly conservative. It was difficult to anticipate the volume that would be generated through the various trade spending programs so, as a customer marketing director noted: "Sales is tending to cancel promotion programs if they feel uncertain about the volumes that the program could generate."

Another concern, particularly from some sales managers, was that the planning process was not adequately customized to differences in product, geographical and customer characteristics. On the product issue, for example, a customer marketing manager, commented:

> The case rate system allows flexibility to plan at account level, but it may not be suitable for certain brands and products. Some products such as Hunt's Spaghetti Sauce may need only a simple strategy such as every-day-low-price strategy. Other products, such as Van Camp, only contribute small volumes. It may not be worthwhile to manage such products through the complicated case rate system. Perhaps the case rate system should only be used for the larger growth brands, such as Orville Redenbacher.

Many CAGP sales personnel and customer account personnel hoped that CAGP could move to an annual, rather than a semi-annual, planning process. Some customers, particularly, were concerned about the inflexibility in the use of excess funds that were generated late in the six-month period. For example, one thought that the lack of "carryover" of unspent funds to the next period "spoiled an otherwise good program." Most sales and account personnel also did not like the fact that case rates often changed at the six-month point, sometimes significantly. For retailers who planned their promotions far in the future, this change and uncertainty was annoying. Some sales personnel also noted that an annual planning process would further reduce the paperwork requirements. But many trade-marketing managers admitted to be struggling with even the six-month horizon. As one said, "Everything out that far in the future gets foggy."

Finally, the new system did not provide a complete solution to the problems of forward buying, diverting, and lack of customer compliance. *Lack of customer compliance* manifested itself in many different ways. For example, some customers would take deductions they did not earn (e.g., did not implement the promotion, did not pay in time to earn the discount). Some would deduct for unsaleables without supporting documentation. Some, if a shipment were short, would order from a competitor and bill CAGP for the difference in price. In many of these cases, CAGP managers concluded that they had little recourse unless they were willing to shut off the customer's supply of product.

CAGP managers had discussed implementing *national* case rates to further eliminate the diverting problem. National case rates would reduce the ability of CAGP personnel to tailor its promotional offerings. But with mergers in the grocery industry and the growth of larger customers (e.g., WalMart), applying case rates on a national, or at least a larger regional, basis was becoming easier to do.

On-going Review Processes

Ken Sobaski thought that the new system was a positive step but that considerable work remained to be done. The Trade Promotion Effectiveness Team was charged both with helping to solve the problems associated with the adoption of the new system and investigating whether the new case rate system was leading to more effective use of the trade funds and the building of brand equity. Ken also knew that the company had to build its capability to better measure product and customer profitability. But while he could

perhaps envision a better system, he also had to concern himself with the organization's ability to absorb what had been significant change in a relatively short time period.

Exhibit 1
ConAgra Grocery Products Company
Executive Organization Chart

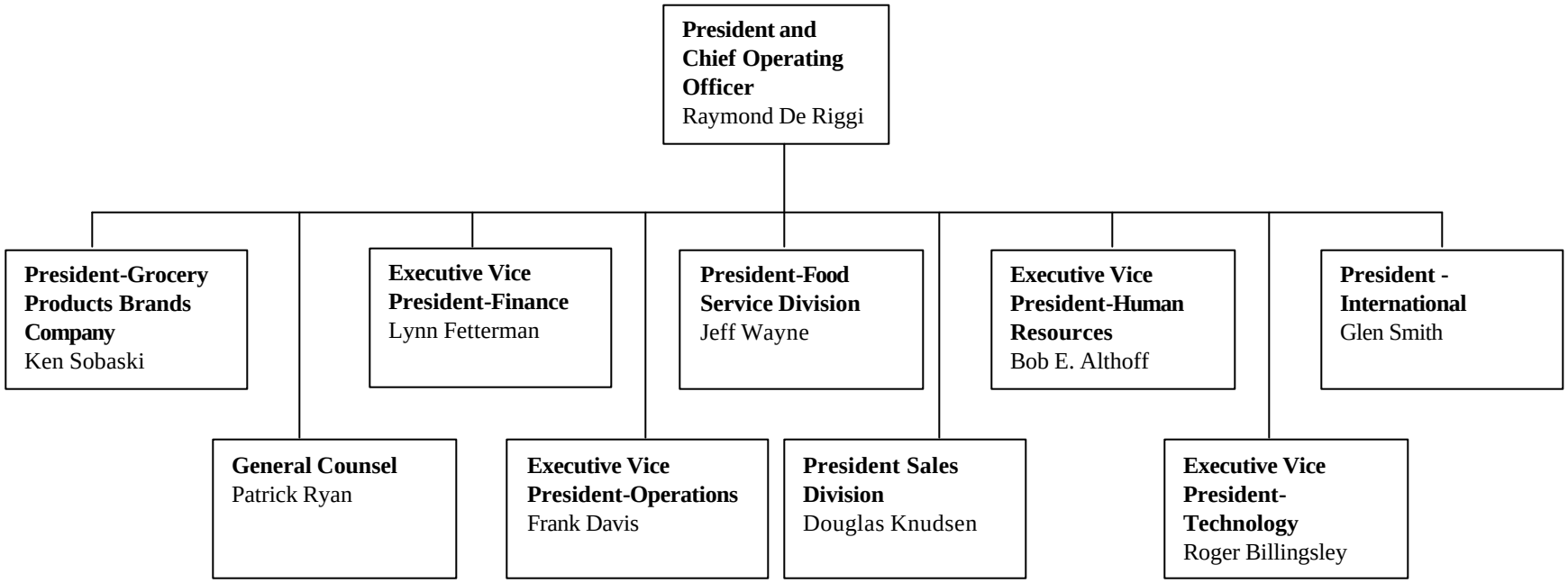


Exhibit 2
ConAgra Grocery Products Company
Marketing

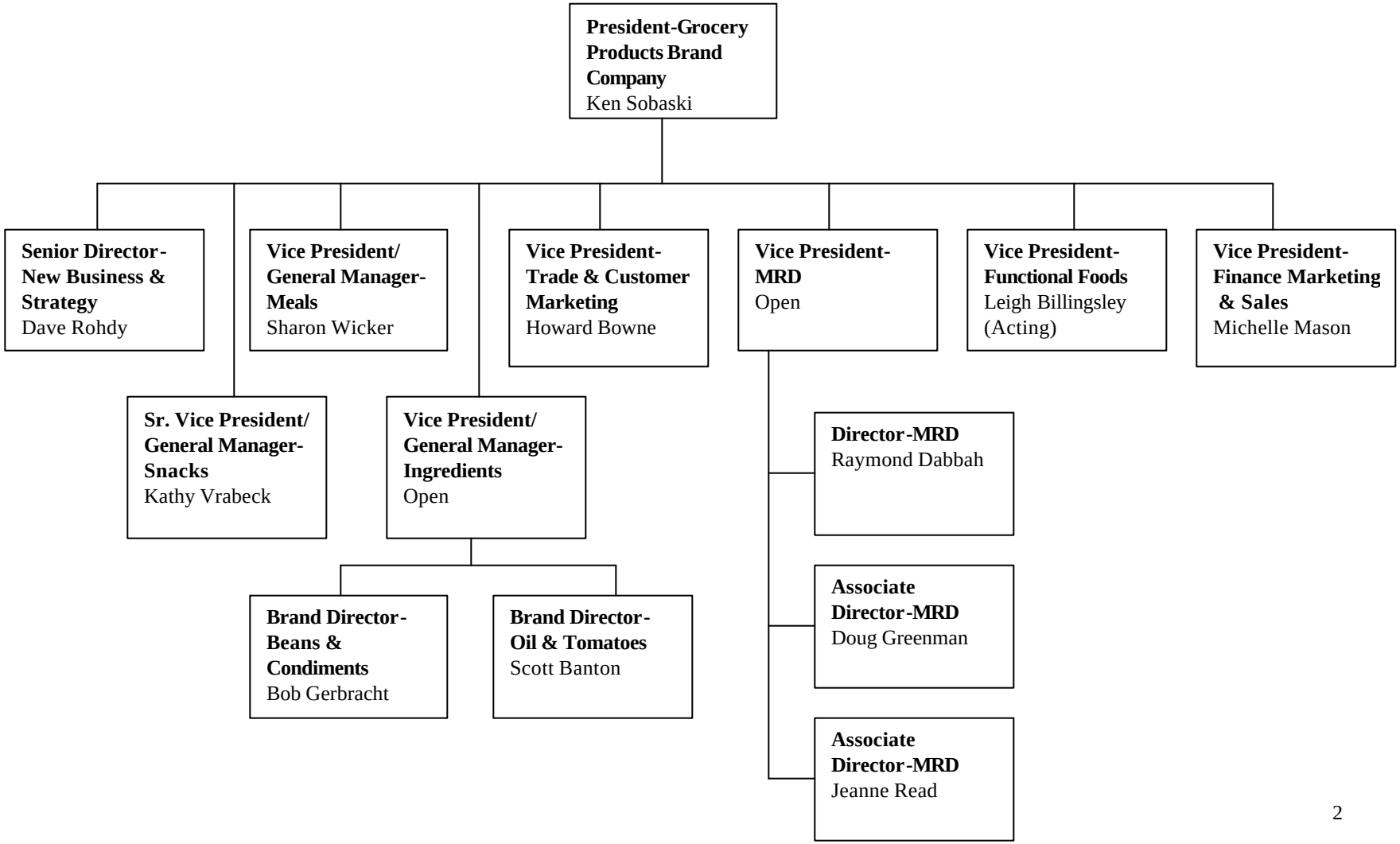


Exhibit 3
ConAgra Grocery Products Company
Trade Marketing

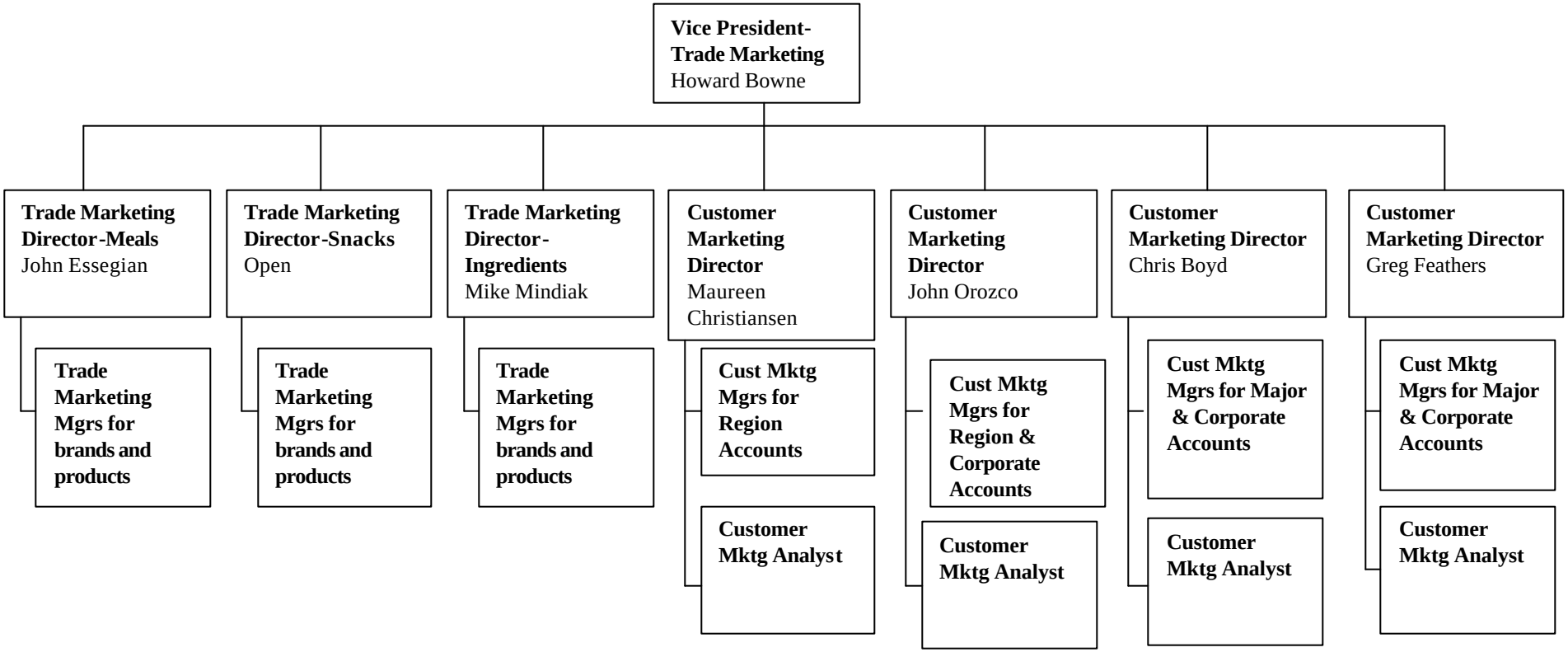
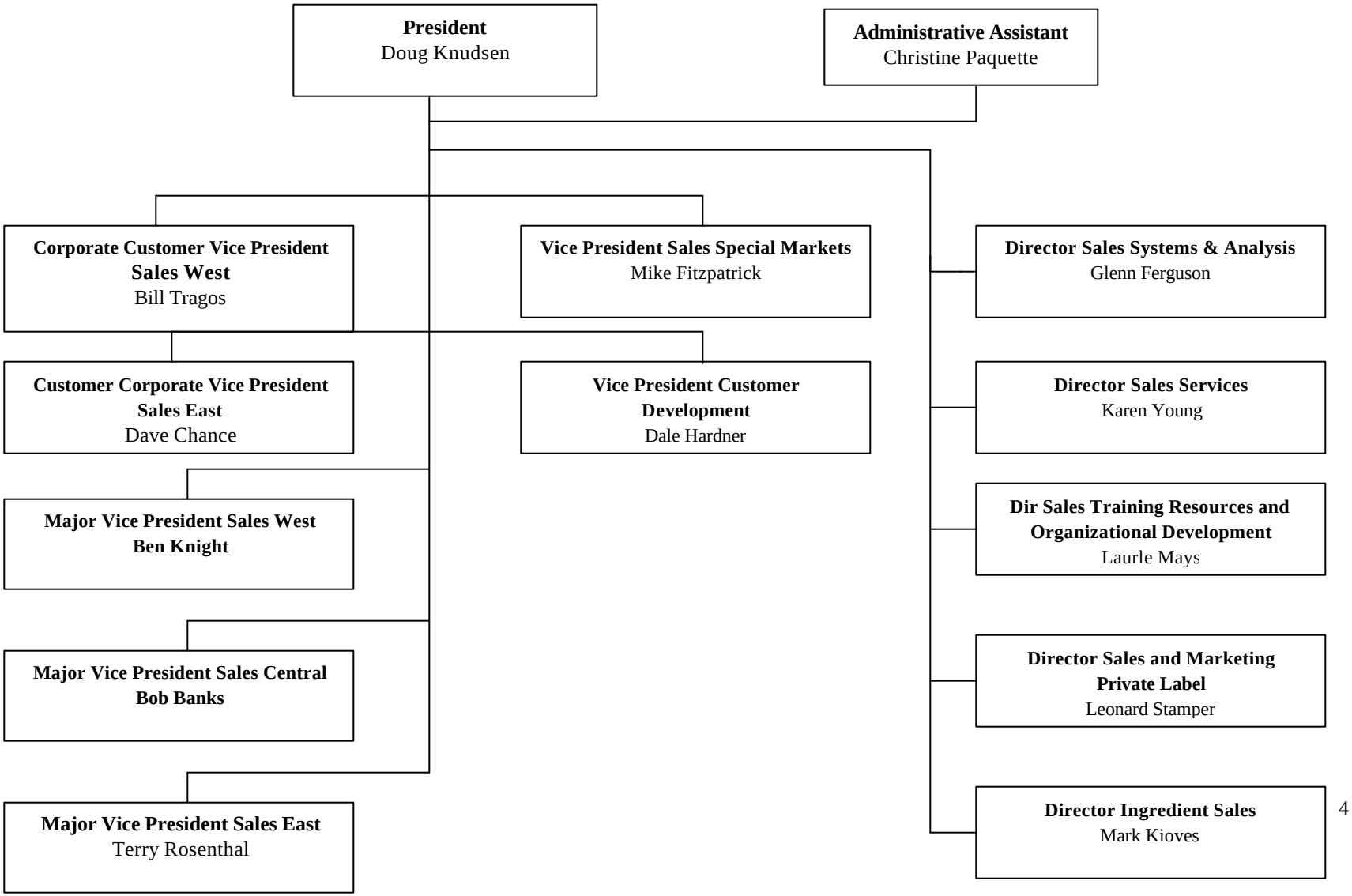


Exhibit 4
ConAgra Grocery Product Company
Sales Division



Professors Kenneth A. Merchant and Research Assistants Lay Khim Ong and Liu Zheng wrote this case as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

High-Tech (H-T) Incorporated
A Strategic Cost/Management Accounting Writing Intensive Instructional Case

By

Jenice Prather-Kinsey
Associate Professor
School of Accountancy
University of Missouri-Columbia
321 Middlebush Hall
Columbia, MO 65211
Prather@missouri.edu
573-882-3671
573=882-2437

The author gratefully acknowledges the comments and cooperation of the anonymous company and its executives, Pierre-Laurent Bescos, PriceWaterhouse Coopers and students and faculty from the University of Missouri-Columbia.

High-Tech (H-T) Incorporated A Strategic Cost/Management Accounting Writing Intensive Instructional Case

EXECUTIVE SUMMARY: This case is about a multinational corporation that is implementing its strategy from the corporate level to the plant floor. The case requires students to develop a balanced scorecard, a tableau de bord, cost allocation methods, cost drivers and standard costs in meeting corporate strategy. This is a writing intensive, critical thinking, and creative thinking case. The case requires students to be critical of H-T's current costing system, to be creative in developing a value chain, balanced scorecard and tableau de bord for H-T and its divisions and to integrate concepts presented in the cost managerial accounting textbook. This is a semester long case that can be used in the first cost accounting course at the undergraduate level. This case study was developed from visits that the author made to a real world company with locations in the U.S. and France.

Note: The data used in this study is camouflaged at the company's request.

High-Tech (H-T) Incorporated: A Strategic Cost/Management Accounting Writing Intensive Instructional Case

INTRODUCTION

The objective of these three cases is to challenge students to apply textbook methods to solve cost/managerial accounting issues in a multinational computer company. The case assignments require students to critically study High-Tech's (H-T's) current costing system and to relate it to textbook costing-methods. H-T's current costing-methods lack a strategic focus and in many instances do not depict H-T's underlying operations. After a critical analysis, students develop a strategy-based balanced scorecard (tableau de bord) for H-T (H-T's divisions) and develop costing methods that would be useful in monitoring its strategy. Moreover, students are challenged to recommend implementation of alternative costing methods for H-T.

I have successfully used these cases for two years to enhance undergraduate (juniors and seniors) accounting majors' creative thinking and writing skills and to introduce them to international management accounting issues during their first cost accounting class. Two major advantages of using one case throughout the semester are integration of concepts taught during the semester and reduction in start-up time from studying one rather than multiple companies/cases.

Traditional methods of cost/managerial accounting have been cited as "relevance lost." Since the 1950s, manufacturing companies have moved from national to international companies, single product to multiple product companies and from labor intensive to capital-intensive companies. Traditional product/service methods of determining costs include accumulating manufacturing overhead into one cost pool and allocating costs to products based on 3 hours/dollars. A tour of a manufacturing company today, such as General Motors,

Anheuser Bush or Dell, will reveal that most production costs are not labor driven, but machine driven. Thus, using a labor related allocation base could distort product costs. Moreover, global competition has forced management to take a more strategic focus when developing their cost/managerial accounting system.

The objective of the first case, "Implementing and Monitoring Strategy," is to challenge students to develop cost systems based on the strategy of the corporation and its underlying operations. Students must develop a balanced scorecard that puts H-T's strategy into action. The case requires students to be creative in developing a balanced scorecard. Some students have made their scorecards resemble a stereo system with the receiver, tape deck, CD and turntable controls, each a separate scorecard perspective. Others have chosen to have their scorecard resemble the dashboard of a car or the knobs on an oven. The goal is to make students think out of the box. Students are also required to use the value chain as a link between H-T's strategy and balanced scorecard.

The second case, "Are Standard and Activity Based Costing Appropriate for H-T?" suggests that the traditional method of product costing does not reflect the underlying complex and capital-intensive operations of H-T. Students must develop a standard and activity based costing system that reflects H-T's Raleigh division operations. This is challenging because the students must develop cost-drivers that are balanced scorecard targets and they have to be conversant about activity-based-costing (ABC). This assignment requires many faculty office hours. While students can do the ABC computations, they find it difficult to explain ABC.

The third assignment, "Allocating Costs in a Multicultural Company," requires students to use joint costing and service department cost allocation methods to determine the Essonnes Division's transfer price. This assignment is difficult because accounting students must look at

the human side of the numbers. During the semester, students are assigned short readings about the French culture and about accountants' experiences when implementing ABC in France. Students are usually taught how to calculate joint costing numbers and not about how the numbers might affect company personnel. Moreover, this case presents students with the multi-cultural issues of multinational companies. From this case, students get a balanced perspective--quantitative, qualitative, human resources—of cost managerial accounting issues in a globally competitive business world.

These cases are designed to make students write about the numbers that they produce in textbook problems. Students find it difficult to explain the numbers. I require an original and revision of each case. The research assistant (RA) and I grade the original version of the paper and we decide on the points to be given to each paper. We return both marked-up copies of the paper to the student. The students are generally given one to two weeks to revise the original paper. The RA and I grade the rewrites and we assign a second grade. The students are much better at the revision and usually experience significant grade improvements over the original paper grade. It's important to remember that these students are taking their first cost accounting class and therefore have limited knowledge about accounting. I assign readings and SAP applications in addition to the textbook assignments to give students the background needed to complete the case. The teaching notes reveal that the focus is on how well the student can converse about the concepts presented in the textbook and assigned readings. Students are not expected to do a great deal of in-dept outside reading as this is an undergraduate, first cost accounting course.

LEARNING OBJECTIVES

1. To apply and integrate corporate strategy, the value chain and the balanced scorecard to a multinational computer company. Time-based and customer satisfaction-based goals

should be included in the balanced scorecard.

2. To demonstrate how managers of each element in the value chain work as a team in meeting corporate strategy.

3. To develop an activity based costing allocation methodology for a computer company that would incorporate tableau de bord targets.

4. To allocate joint-costs and service department costs in determining transfer prices for logic and memory chips.

6. To understand that there are human resource issues associated with implementing cost systems across a company and cultural issues when divisions are located outside of the United States. Students often forget that there is a human element to accounting numbers.

BACKGROUND

High-Tech (H-T) is a computer manufacturer founded in New York in 1901. H-T originated as a commercial scale, cheese and meat slicing, punch card, tabulating and time recording conglomerate. The company began with 1,300 employees and with sales in Canada, D.C., Michigan, New York and Ohio. The company had a difficult time managing its diversified products in numerous locations. H-T undertook several strategies to overcome its faltering operations. First, H-T increased sales by implementing healthy sales incentives, grooming its salesmen in dark suits, promoting company pride and loyalty in its employees and beefing up customer services. Second, H-T focused on selling tabulating machines, and expanded sales to Asia, Australia, Europe and South America. These strategies helped H-T overcome its sinking operations. While other companies were folding during the depression, H-T continued to grow and began providing employee benefits such as life insurance and paid vacations.

Just-in-time inventory control would not have been useful to H-T during the depression. Because H-T had large inventories on hand, they were able to undertake large government contracts during the 1930's. H-T had become so large in the computer industry that they were

constantly being sued, but unsuccessfully, for antitrust violations. During World War II, H-T continued to grow through government contracts. H-T used some of its profits to finance orphans and widows of war casualties. This goodwill act helped to foster employee loyalty and demonstrated good community citizenship.

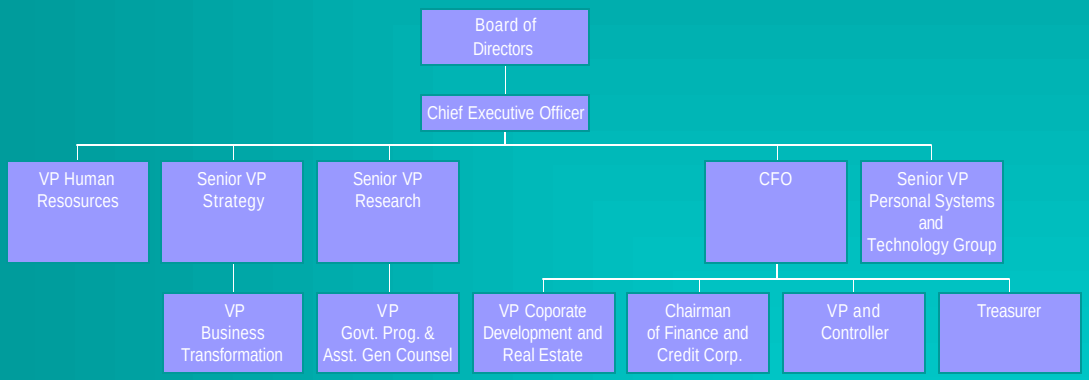
Technological development escalated beginning in the 1950s. H-T first developed a five-ton 50-foot by eight-foot calculator. This calculator was replaced with vacuum tubes and later replaced with a mainframe transistor that was faster and smaller than the vacuum tube. By 1957, H-T had a spinning disk storage system that could assess and process accounting data on as many as 50 disks and introduced the FORTRAN computer language. H-T was so large that they supplied 90% of Europe's computers, had $80 billion in sales and 270,000 employees. From 1970-80, H-T became the leading manufacturer of mainframe computers, hardware, software, and services. By the 1980s, H-T was manufacturing floppy disks, bank automatic teller machines and PCs for small businesses, schools and home use. H-T now has manufacturing plants located in Raleigh, NC and Essonnes, France. In Raleigh, NC, H-T manufactures low-end servers and personal computer systems and in Essonnes they manufacture logic and memory chips. H-T is now vertically integrated and produces, services, and sells products exclusively in the computer industry. More recently, H-T has experienced a downturn in earnings resulting from a very competitive computer industry.

Systems Information.

H-T's corporate strategy is to get **multi-year cooperative agreements with SAP adopters to increase H-T's share of the computer hardware market.** H-T uses a normal costing system where manufacturing overhead is applied and estimated annually and quarterly and all other costs are recorded at actual using a stand-alone weighted-average accounting

information and inventory system. Stand-alone implies that the cost accounting system is not integrated with financial accounting, finance or logistics ledgers. They hope to install SAP, an electronic resource planning system, but that has not happened yet. Because cost accounting is stand alone, at the end of each quarter considerable accounting effort is spent integrating cost data with financial accounting and logistics data. Each production location (Raleigh and Essonnes) is managed separately and within each location there is decentralization of functions. The cost accountants focus solely on budgeting, recording and analyzing costs. H-T's organization chart and its financial statements-- income statement and balance sheet--appear below.

HT Organization Chart



High-Tech Corporation
Income Statement
At December 31
(Dollars in millions except per share amounts)

	2002		2001
Revenues:			
Hardware Sales	36,500		35,700
Services revenues	15,000		12,000
Software sales	13,000		13,000
Maintenance revenues	7,000		7,000
Rentals and financing income	1,600		1,500
Total Revenues	73,100		69,200
Cost of sales:			
Hardware Sales	24,000		22,000
Services expenses	12,000		10,000
Software expenses	4,000		4,400

Maintenance expenses			3,600		3,600
Rentals and financing expenses			1,600		1,500
Total Cost of Sales			45,200		41,500
Gross Profit			27,900		27,700
Selling expense			15,000		15,200
Research & Development expense			4,000		4,000
Operating Income			8,900		8,500
Other income			9,000		8,000
Other expenses			710		720
Earnings before income taxes			17,190		15,780
Income tax expense			3,100		3,600
Net income			14,090		12,180
Dividends paid			22		60
Net income to common stockholders			**14,068**		**12,120**

High-Tech Corporation
Balance Sheet
At December 31
(Dollars in millions except per share amounts)

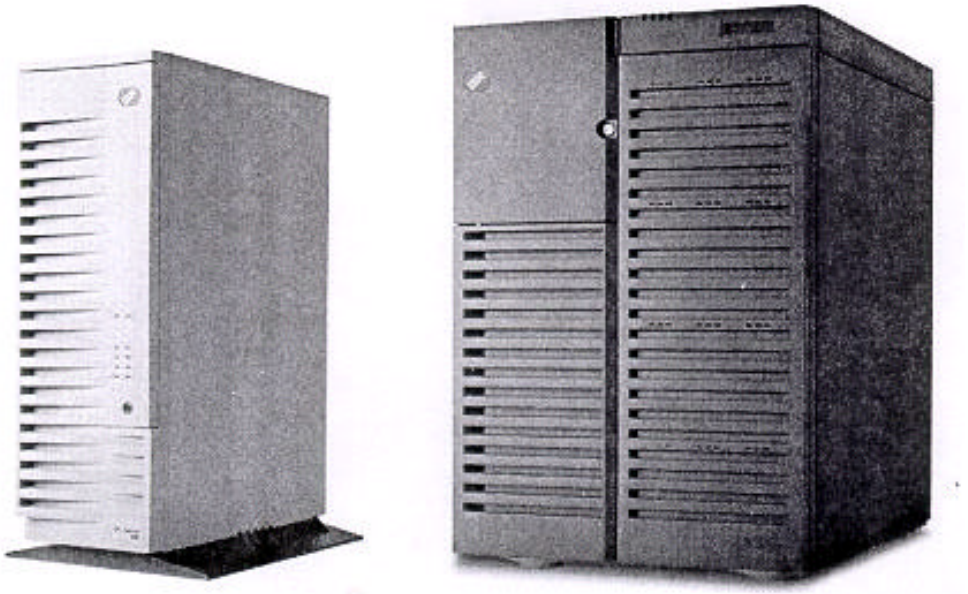
	2002	2001		2002	2001
Assets			Liabilities		
Current Assets:			Current Liabilities:		
Cash and cash equivalents	7,680	7,260	Taxes payable	3,000	2,600
Marketable securities	500	450	Short term payables	13,000	11,500
Notes and accounts receivable	16,500	16,400	Accounts payable	5,000	4,500
Sales lease receivables	5,700	6,000	Compensation and benefits	3,000	3,000
Other receivables	900	1,000	Deferred income	3,700	3,500
Inventories	6,000	6,000	Other liabilities	6,600	6,500
Prepaid expenses	3,500	3,200	Total current liabilities	34,300	31,600
Total Current Assets	40,780	40,310			
			Long term liabilities	10,000	10,000
Property, plant and equipment	41,200	44,000	Other debt	14,000	14,300
Less: Accumulated Depreciation	-25,000	-27,000	Deferred income taxes payable	1,600	1,800
Net property, plant and equipment	16,200	17,000	Total liabilities	59,900	57,700
Software - net	2,000	2,500	Stockholder's equity		
Investments & miscellaneous acct	22,500	20,600	Preferred Stock	353	353
			Common Stock	8,500	8,400
Total Assets	**81,480**	**80,410**	Retained Earnings	10,327	10,657
			Translation adjustment	2,400	3,300
			Total stockholder's equity	21580	22710
			Total liabilities and stockholder's equity	**81,480**	**80,410**

RALEIGH, NC

The product development cycle for low-end servers and personal computer systems is three months. This means that faster and cheaper computers are developed at least three to four times a year. The computer industry experiences a 2-3% decline in raw material costs and selling prices each quarter. Therefore, product costs are changing constantly. While head count is high at Raleigh, this cost is stable and represents only about 5% of product cost. 70% of product cost is materials and 25% is manufacturing overhead. Traditionally, for manufacturing overhead in production, direct labor dollars have been the allocation base. Examples of servers produced by H-T appear on the following page.

PC Server

Small Business Server
With Room to Grow



PC Server

A High Performance
SMP Enterprise Server

PC Server

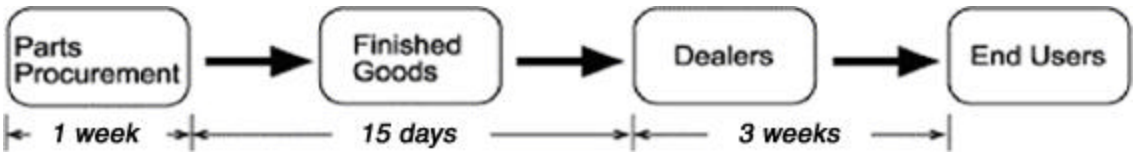
Server with Per

Netfinity

The new generation of
application servers

Raleigh tries to trace most of its costs directly to the product. Labor and materials are traced directly to the product through bar codes. Each material input component is bar-coded and traced directly to the unit to which it is attached. As materials move through assembly, assemblers indicate which unit of output they are assembling through bar codes. For each product produced, a diskette includes the serial number assigned to the finished server, the assembler I.D. number and the identification number of parts used to make the server.

Since the market fixes the price of labor and materials, H-T hopes to increase profit margins by reducing manufacturing overhead costs. H-T believes that it can reduce costs by reducing throughput time. Throughput is defined as follows:



H-T's strongest competitors reduce throughput time by eliminating the dealer. Their competitors sell directly to the final or end customer. However, the dealers provide a level of immediate service to end customers at the end customer's location that is not provided by its competitors. Competitors' customers have to call an 800 number and sometimes wait 30 minutes on the phone before a technician can answer their question. Many customers who have software installation problems must see a computer specialist at their own cost, or for other problems they may have to return their equipment to the vendor and wait 2-3 weeks before the computer is replaced or repaired. Therefore, H-T must weigh the benefits of selling through dealers to its end customers as opposed to reducing throughput time by eliminating dealers. Lead-time from dealer order to receipt of goods by the dealer is usually three to four weeks. Dealers generally hold five-week inventory levels to avoid stock-out costs and to compensate for

goods that may be damaged during shipment. If not sold immediately, dealers have unsold obsolete inventory on hand. In the past H-T has provided rebates to dealers for obsolete inventory. This way, dealers can offer obsolete inventory at discounted prices to their customers. H-T is concerned that this policy sends the wrong message to dealers. That is, if dealers don't move their inventory fast, the dealer doesn't lose because H-T will discount the merchandise. Therefore, dealers are not motivated to buy from H-T in small quantities or to sell their inventories quickly. H-T wants dealers to more accurately estimate their sales so that they don't end up with large quantities of obsolete inventory on hand. H-T's competitors not only reduce dealer costs by not having dealers, but also reduce costs related to storing outdated inventory at the dealer's location.

H-T records procurement parts costs when invoiced. So if they invoice a purchase in March, they use February costs because March costs are not known at the time of invoicing. At the end of March, when H-T knows the actual cost of March purchases, they record the under- or over-applied materials/parts cost as the difference between actual and recorded parts cost. Variances are investigated at the top end of the organization, outside of the cost accounting department. Some variance is tolerated/expected due to the rapidly decreasing parts cost in the computer industry. Similarly, when dealers are billed for computers purchased, they are billed at the previous month's price and the invoice price is adjusted the following month to reflect the actual selling price. That is, H-T does not know the cost of producing the computers and therefore the selling price of the computers until a month later when their vendors invoice raw materials. This is when H-T knows the actual cost of parts procurement. Sizing or the comparison of ledger to physical inventory is done annually.

On the manufacturing floor, the flow of production of low-end servers is as follows:

Upon arrival, parts are debugged for defects. Non-defective items go in the storage bins until a unit of output is demanded. Once demanded, components needed to complete the order are placed in a basket. The basket (kit) contains the parts, and a diskette that has the part numbers, order number and debugger's identification number (I.D.) recorded on it. Upon leaving the kitting area, the order is debugged for errors in parts selected to complete the order. The debugger's I.D. is entered on the diskette. The assembler, one person, then assembles the server. The assembler must enter their I.D. on the diskette and verify the parts received. After assembling, the assembler checks the machine for mechanical failure. Once completed, the machine, its invoice order number and diskette go to the assembly inspection station. The inspector enters their I.D. on the diskette and inspects the completed server. The inspector inserts software into the machines to conduct the appropriate tests. If a defect is detected, the inspector flags the assembler and stops that assembler's operations until the problem is fixed. Goods cannot move to the next station (i.e., from parts selection, to kitting to assembly to shipping) until the previous station has quality output. Servers are the high profit margin products for H-T so they stress quality (< 2% defect rate) in production. The inspector indicates on the diskette which quality-tests have been conducted and removes all testing software not requested by the customer. Finally, the server is boxed and sent to shipping. A history of the production and inspection of the machine is kept on diskette and mailed to the central office. Information from this diskette is used to trace materials and labor costs directly to output. In production, all overhead is allocated to products using number of parts as the cost driver. A server could require from twenty to thirty parts, depending on the customer's specifications. All servers are packed in identical size boxes and manufacturing time depends on the number of parts tested.

Shipment of almost all of H-T's products (servers, PCs and mainframes) is out of Raleigh. In addition to the production area, Raleigh has 450,000 square feet of warehousing space. Inventory is in the warehouse for an average of 10-15 days before shipping. H-T uses activity-based-costing (ABC) to allocate annual warehousing and shipping costs to each product as follows (in millions):

	Cost Driver			
Activities	Indirect Head Count	Square Foot Floor Space	Hours Scanning Out-Bound Freight	Hours Information Systems
Receiving (from mfg.)	$50			$ 15.5
Shipping parts to shipping lane	$120			$ 12.0
Storage		$ 700.5		$ 10.5
Transportation out	$185		$30	$ 10.0

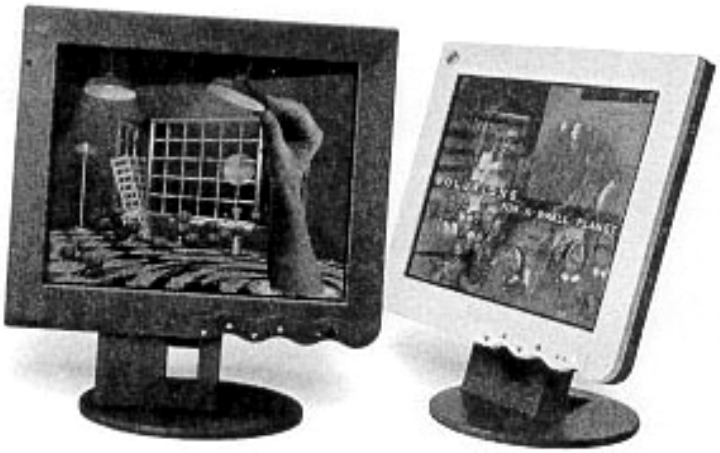
Annual allocation of expenses to products is then conducted as follows:

	Desk Top	Server	Monitor	Lap Tops	Options
Receiving					
Head Count	1,000	500	600	1,200	400
Info. Systems (hrs)	600	120	100	800	60
Shipping parts to lane					
Head Count	800	100	100	800	20
Info. Systems (hrs)	80	10	60	80	15
Storage					
Floor Space	1,000	2,000	600	800	400
Info. Systems (hrs)	100	100	100	100	100
Trans-out					
Head Count	70	120	50	80	20
Info. Systems (hrs)	20	15	10	20	5
Scanning Hours	10	5	5	10	2

For some parts, transportation-out is the highest cost (servers). For example, servers have high transportation-out costs because they are heavy. For other products, order filling is the highest

cost (desktops). For example, desktops absorb high order filling costs because desktops are composed of multiple individual parts. The desktops may have 10-15 pieces to a box so it takes more time to fill a desktop order than a server order, which is composed of one or two parts. Examples of desktops produced appear on the following page.

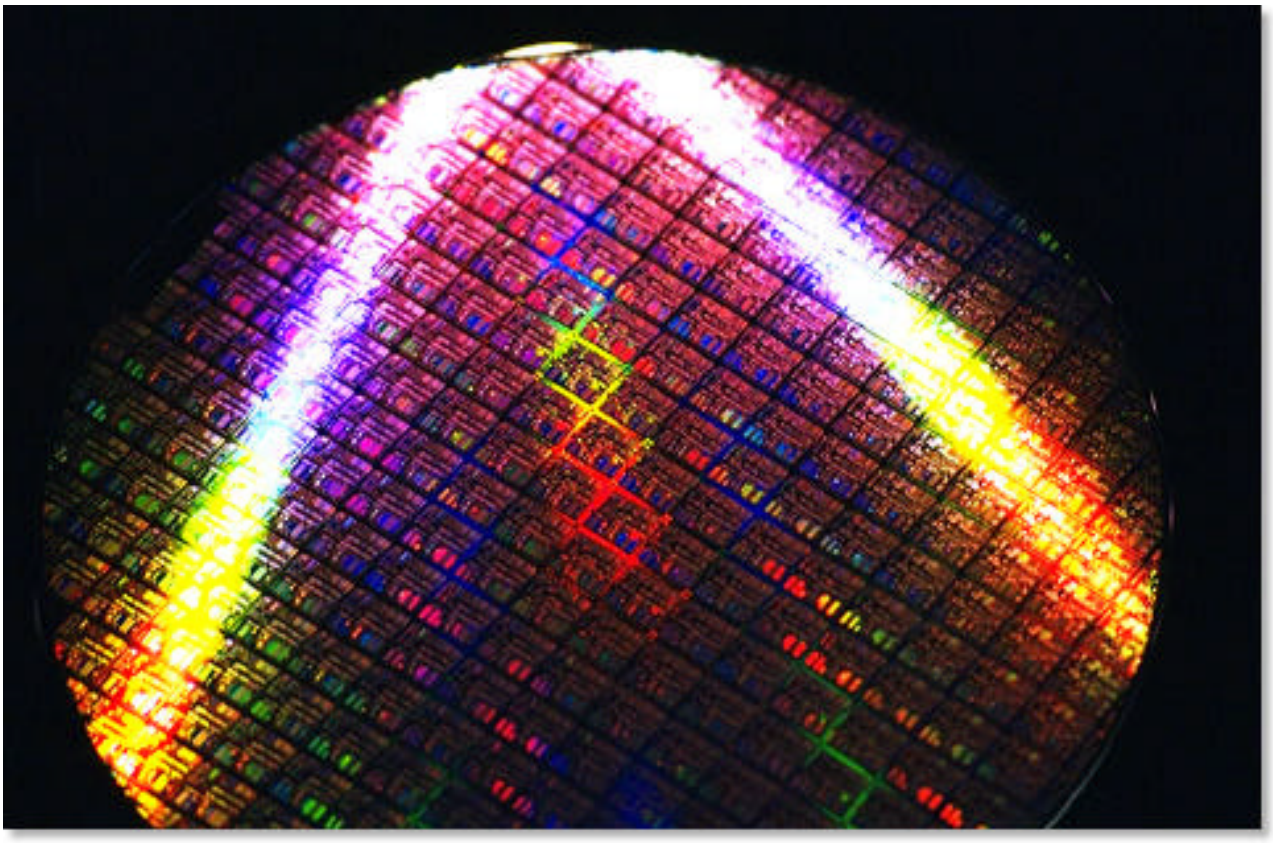
Monitors



Professional Workstations

ESSONNES, FRANCE

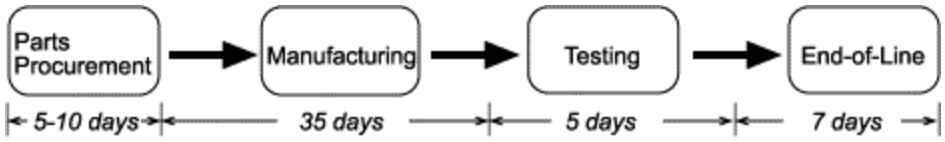
In Essonnes, France, H-T manufactures logic and memory chips from a silicon wafer. The silicon wafers are sliced from a silicon cylinder. The silicon cylinders are $400 each. Each working day H-T manufactures approximately 1,200 wafers. (An example of a silicon wafer appears below.) In Essonnes, production takes places 24 hours a day, seven days a week and 52 weeks a year. The only days off are May 1 because the French law of 1936 requires it and December 25. However, accounting executives' working hours are generally 8:30 a.m. to 6:00 p.m., five days a week.



H-T purchases silicon cylinders for $400 each. Approximately 125 wafers can be sliced from each cylinder. During slicing, there is a loss of 20% of the silicon cylinder. They have quality assurance contracts with their vendors to assure the quality and on-time delivery of their production parts (silicon cylinders). After an order is received, H-T slices the silicon cylinders into wafers.

After slicing the cylinder into wafers, these wafers are cleaned and chemically coated during joint processing. Also, in joint processing, H-T incurs monthly property plant and equipment-depreciation expense, taxes, patent amortization, and other factory overhead costs of $120,000. H-T's salaried engineers in the joint processing department earn a total annual payroll of $2,070,000 a year. The joint processing of the wafer results in two distinct products, memory chips and logic chips. Quality control is very important in processing the wafer, even the air is filtered and controlled and the equipment used to make the chips is monitored closely by engineers for quality of production. It takes 250 steps of processing and 150 quality control steps to produce a finished wafer. Rooms full of tools and expensive high tech equipment are used in the production area. Manufacturing includes using an ultraviolet light to project the memory chip images onto the wafer. During the testing phase, each wafer is tested and visually inspected. Materials cost beyond joint processing is negligible. However, manufacturing overhead is substantial and includes information systems, utilities, maintenance and quality assurance. End-of-line includes dicing the wafer and picking the good memory and logic chips from the wafer. Each chip is charged to H-T's internal customers at cost plus ten percent.

From each wafer H-T can usually get a total of 100 logic chips and 400 memory chips of which 5% of the good output is loss. The loss is detected at the end of production. To minimize costs, H-T is currently focusing on increasing the yield from each cylinder and wafer. Some waste is expected because square chips are being manufactured on a round wafer. Production cost and time flows are as follows:



After end-of-line, the chips go to production control where they are distributed to their internal

customers at a transfer price of 10% above total production cost.

H-T spends considerable effort in developing and implementing its budget. H-T prepares five-year strategic plans from which flow yearly budgets and quarterly budgets. The annual budgets begin with actual data that is negotiated with production managers to produce annual and quarterly budgets. Budgeting involves a cross-functional team to insure optimal corporate goal congruence (as opposed to unit-focused goals that may be suboptimal to the corporation as a whole). Upper management has weekly technical meetings with production regarding yield, lead-time, and quality of shipped output. Each quarter (3 months), H-T compares actual with monthly budgets. Usage of the service department centers during 2002 follows.

2002 JOINT PROCESSING COST CENTER
H-T's Actual Usage for the Year

Suppliers	Information Systems (Computer hours)	Utilities (Square kilometers)	Maintenance (labor hours used)	Quality Assurance (# people on production line)
Users of joint processing service departments				
Utilities	500		70,000	100
Maintenance	1,200	1,000	60,000	100
Memory Chip	500	2,000	12,000	500
Logic Chip	500	1,000	60,000	800

The budgeted charge-out rate for information systems is $10,000/hour, for utilities is $20,000/square kilometer, for maintenance is $80/labor hour and for quality assurance is $52,000/person.

Information systems include the salaries of personnel, accounting and budgeting costs and costs associated with the mainframe central processing unit. Utilities include building repairs,

electricity, water, fuel, property taxes, and building depreciation. Maintenance involves servicing the machinery used in production and computers and mainframe systems used throughout H-T. Quality assurance represents those personnel who measure quality and who conduct surveys on supplier, employee and customer satisfaction. Full absorption costing is used to determine product costs. For the French definition of full absorption costing, see Bescos and Mendoza (1995).

H-T wants to assign costs so that managers maximize the quality of output and reduce the percentage of spoiled chips from each cylinder and wafer (yield). Currently H-T uses a traditional normal costing system and allocates all processing costs to the good chips only. H-T also wants a cost system that accurately allocates overhead costs to chips.

To monitor quality, H-T continuously queries its suppliers, employees and customers. Employee satisfaction is important because they believe the more satisfied the employee, the more likely the employee will seek to achieve quality output efficiently. In France, the employees are very concerned about job stability as a result of the downsizing that has taken place. H-T has reduced the number of buildings occupied by 60%, the number of employees by 40% and has increased production 100% over the past five years as a result of increased technology in its production facilities. Thus, employees are working harder to achieve corporate goals in a competitive environment. Customer surveys include questions about on-time delivery. H-T strives to have a 98-99% on-time delivery rate.

IMPLEMENTING AND MONITORING STRATEGY

Corporate and Raleigh, NC

H-T is in the process of designing a balanced scorecard for the company overall and a Tableau de bord for its plant in Raleigh NC. Management's overall corporate goal is to get **multi-year cooperative agreements with SAP adopters to increase H-T's share of the computer hardware market.**

1. Develop a value chain for H-T Corporation and for its operations in Raleigh. Your value chain models should be illustrated similar to your textbook. Explain functions in the value chain with examples. For instance, define in your own words, research and development costs (R&D) and indicate what projects might be undertaken in R&D. Just because you have the R&D element in the corporate value chain does not imply that you have a R&D element in the Raleigh value chain. Therefore, the corporate value chain may look different or similar to Raleigh's value chain. You must explain why the chains are similar or dissimilar between the corporate office and the Raleigh plant site.

2. A balanced scorecard is usually used to depict corporate strategy. A Tableau de bord is a reflection of the balanced scorecard but represents a division's responsibility in achieving corporate strategy (Epstein and Manzoni 1997). For example, a balanced scorecard includes a 5% increase in operating profits as one of its goals. However, a cost center will usually focus on the cost element of operating profit. Therefore the cost center's Tableau de bord will have cost goals rather than revenue or profit goals. Develop a balanced scorecard for H-T Corporation similar to that of Kaplan and Norton (1992), but be creative in developing your illustration. You must provide objective measures for each of the four perspectives of the balanced scorecard. Explain how your balanced scorecard monitors how well the corporation is meeting its objective(s).

3. Develop a Tableau de bord for H-T's operations in Raleigh. The Tableau de bord should be consistent with the corporate balanced scorecard goals. You should contrast the difference of Kaplan's Balanced Scorecard as you illustrated in number two above with the tableau de bord for Raleigh.

4. Prior to the summary of your paper, you should recommend whether H-T should use the balanced scorecard only or the tableau de bord for Raleigh as well as the balanced scorecard for corporate headquarters.

Your paper should include at least two references in addition to the textbook. This manuscript will be graded based on the following criteria.

Clarity (20%)
Creativity or critical thinking (15%)
Grammar (25%)
Cost-accounting terminology (25%)
Documentation (15%)

ARE STANDARD AND ACTIVITY BASED COSTING APPROPRIATE FOR H-T?

Raleigh, NC

H-T is contemplating using activity based costing (ABC). Answer the following questions about the Raleigh, North Carolina location.

1. Would you recommend that H-T consider using activity-based-costing throughout the Raleigh plant site? That is, H-T is currently using ABC in the warehousing area only.

2. What costing system is H-T using in the production area: actual, normal or standard? What costing system would you recommend that H-T use and why?

3. Develop a model (see Horngren, Foster and Datar (2000), exhibit 5-3, page 146) for H-T to use if it considers adopting ABC at the Raleigh plant's production department. Your model should include identification of activities and cost drivers for which standards should be developed. To defend the cost drivers used, relate them to the tableau de bord and corporate strategy targets that you developed in the assignment, "Implementing and Monitoring Strategy."

Your paper should include at least two references in addition to the textbook. This manuscript will be graded based on the following criteria.

Clarity (20%)
Creativity or critical thinking (15%)
Grammar (25%)
Cost-accounting terminology (25%)
Documentation (15%)

ALLOCATING COSTS IN A MULTICULTURAL COMPANY

Essonnes, France

Answer the following questions about the Essonnes plant site.

1. Recommend a method that H-T should use in allocating its joint production costs. Explain how this method would be useful in monitoring company strategy

2. Use your recommended joint cost allocation method to allocate joint production costs. Provide an illustration of the computations used to allocate joint production costs.

3. What method did you use to allocate service department costs to the production departments? Explain why you recommend your selected service department cost allocation method.

4. How much will H-T charge its internal customers (transfer price) for:

   a. Memory chips.
   b. Logic chips.

5. H-T is hesitant about implementing standard costing because the manufacturing system is very complicated and because many products share the same manufacturing machines and/or assembly production lines. Assuming that H-T uses normal costing[1] and is considering ABC and standard costing,[2] explain personnel issues. You will probably need to read about the French culture before answering this question. French culture sources should be cited and included in your references.

Your paper should include at least two references in addition to the textbook. This manuscript will be graded based on the following criteria.

Clarity (20%)
Creativity or critical thinking (15%)
Grammar (25%)
Cost-accounting terminology (25%)
Documentation (15%)

REFERENCES

Bescos, P., and C. Mendoza. 1995. ABC in France. *Management Accounting* (April): 33-41.

Epstein, M.J., and J Manzoni. 1997. The Balanced Scorecard and Tableau de Bord: Translating strategy into action. *Management Accounting* (August): 28-36.

Kaplan, R.S., and D. P. Norton. 1992. The Balanced Scorecard—Measures that drive performance. *Harvard Business Review* (January-February): 71-79.

Horngren, C.T., G. Foster, and S.M. Datar. 2000. *Cost Accounting A Managerial Emphasis*. Upper Saddle River, NJ; Prentice Hall.

[1] Normal costing requires allocating direct costs using actual inputs at actual rates/costs and allocating indirect costs using actual inputs at budgeted/standard rates.

[2] Standard costing requires allocating direct costs using standard inputs at standard rates/costs and allocating indirect costs using standard inputs at budgeted/standard rates.

Using Activity-Based Management in a Medical Practice:
Fannon and Martens Cardiac and Thoracic Surgery Medical Group:
Part II - Using Cost Data for Process Improvement and Business Decision Making

Gary Siegel, DePaul University
Gail Kaciuba, DePaul University
Nancy Mangold, California State University at Hayward

March 31, 2001

Presented at the
2001 Management Accounting Section
Research and Case Conference
January 19, 2001

Using Activity-Based Management in a Medical Practice:
Fannon and Martens Cardiac and Thoracic Surgery Medical Group:
Part II - Using Cost Data for Process Improvement and Business Decision Making

Gary Siegel, DePaul University
Gail Kaciuba, DePaul University
Nancy Mangold, California State University at Hayward

I. Introduction to Medical Practice Economics

The medical profession is facing tough times. Over the past few years, Medicare has been reducing its reimbursements to physicians for the work they perform. As Medicare reimbursements drop, HMOs and private insurance companies follow suit and decrease their payments to physicians. At the same time, physicians' costs continue to rise due to inflation and the availability of higher technology treatments for patients. Given this undesirable situation of rising costs and declining revenues, strategic cost management (SCM) becomes critical; indeed, SCM i the only way for a medical practice to remain profitable. According to healthcare financial executives surveyed in 1997 by Arthur Andersen, cost control is the most important issue facing the healthcare industry.

In 1999 medical practices in several states stopped seeing Medicare patients because the Medicare reimbursements did not cover their practices' costs to deliver the service. In 2000, several large HMOs, with tens of thousands of members, followed suit. These actions may be harbingers of things to come. The healthcare crisis in the United States has to be solved in order to ensure that all citizens have access to quality care when they need it. Whatever the solution, accurate cost information will play a prominent role.

Background

Over the past two decades there have been rapid and major transformations in the healthcare industry. For medical practices, the once dominant fee-for-service model, where physicians billed patients or insurance companies for work performed, has given way to a system of "managed care" where a third party stands between the physician and patient.

In the fee-for-service environment, physicians could simply raise their fees to pass along cost increases. With a relatively inelastic demand for physician services, there was no compelling reason to focus on cost control and there was no need for physicians to use cost accounting systems.

Managed care organizations buy medical services from physicians and bill patients and insurance companies for the work that physicians perform. In a managed care environment physicians cannot pass along cost increases because they enter into contracts to provide medical services for a fixed fee. In this environment, with many sellers of medical services and few buyers (HMOs and other large health plans who represent thousands of patients in a community), physicians occupy a weak negotiating position. Various state and federal laws prohibit physicians from joining together in unions or other entities to increase their bargaining power. Consequently, physicians have little choice but to accept contracts to provide services at fees that are set by the seller. Further, because they lack cost accounting systems, many physicians enter into contract negotiations with no knowledge of their costs. They know exactly how much money they spend to run their practice, but they do not know what it costs to see a

patient in the office or to perform a surgical procedure. A 1998 survey of physicians revealed a shared perception that they are working longer hours and earning less money than they did in the recent past.

II. Fannon and Martens Cardiac and Thoracic Surgery Medical Group

Thoracic Surgery in General

Thoracic surgeons treat diseases involving organs of the chest. They replace and repair the valves in the heart, perform bypass surgery for coronary artery disease, treat cancers of the lung and esophagus, correct birth defects of the chest and heart, treat tumors of the chest, and perform heart and lung transplants. Cardiac surgery (a type of thoracic surgery) is the surgical management of diseases of the blood supply to the heart, heart valves and the arteries and veins in the chest. General thoracic surgery, on the other hand, is a surgical field focusing on treatments for problems of the lungs and esophagus.

Thoracic surgeons are among the most highly educated medical specialists. After college and medical school training, a thoracic surgeon will have devoted at least five years to a general surgical residency and passed the certifying examination of the American Board of Surgery. After that, he or she will have devoted two to three years to a thoracic surgery residency and passed the certifying examination of the American Board of Thoracic Surgery.

Dr. Don Fannon and Dr. Dan Martens are two renowned thoracic surgeons. They are graduates of the Stanford University School of Medicine and have each worked in the fields of cardiac and thoracic surgery for more than thirty years. Both are frequent speakers at medical conferences. In 1981, they formed the Fannon and Martens Cardiac and Thoracic Surgery Medical Group (FMMG) in the San Francisco Bay Area.

III. Profit Squeeze

For the last few years, Drs. Fannon and Martens felt that they were working longer and harder, but that their efforts were not reflected in the practice's profits. The reports they received from their CPA firm showed that revenues were rising, but costs were rising faster. At a conference in 1998 they learned about activity based costing and how it could be used to help them understand their business and to find opportunities to reduce costs. Early in 1999 they participated in an ABC project sponsored by the Society of Thoracic Surgeons. The project built an ABC model for the specialty, collected cost data from 40 participating thoracic surgery practices, and generated ABC costs for each practice.

Selected information from the ABC project is presented below. FMMG needs your help in analyzing the information and identifying options to reduce cost and increase profit. The business processes and a list of the cost objects in this study are shown in Tables 8 and 9.

Table 1 shows the cost for each business process for FMMG and three other selected practices. It also shows the mean process cost for the 40 practices that participated in the ABC project. It also shows the number of MDs in each practice and the volume of work performed in each cost object category.

Table 2 shows the breakdown of the "Maintain Medical Records" process. That is, it shows the amount of each expense item that was assigned to this process by the ABC model.

FMMG consists of three surgeons, three physician assistants (PAs), a part-time practice manager, four full-time staff members, and one part-time staff member. Table 3 shows the percent time each non-physician staff member works in the practice.

In order to receive payment for their services, a medical practice engages in four processes: Obtain Insurance Authorization, Billing, Collect Payments, and Resolve Collection Disputes. These are called the Reimbursement processes, and the breakdown of each of these four separate processes into expense line item detail is shown in Table 4.

Table 5 compares the cost of the Service Patients in the Hospital process for Practice #1, FMMG and the database average. Practice #1 does not use PAs in the operating room because Medicare and other insurers will not reimburse the practice for the use of PAs. The rationale of the insurers is that the hospital has staff who could assist in the operating room. The surgeons at FMMG do use their PAs in the operating room because they prefer to have experienced staff (with whom they have worked for years) assisting them during surgeries.

Table 6 shows the unit cost of each cost object (medical service) delivered by the practice: No-Charge Office Visits in the global period, Charge Office Visits, Charge Hospital Visits and Surgeries.

Table 7 shows the breakdown of the unit costs of three of the four cost objects. That is, it shows the amount of process cost assigned to each cost object by the ABC model.

IV. Student Assignments

1. Compare FMMG's Process Costs to the averages of all private thoracic practices, and to the other three practices in the benchmarking group. Which business processes are significantly higher or lower than the other practices? What business conclusions can be drawn from this data? What are the implications for process improvement and cost reduction?
2. Use Table 2 to compare the Maintain Medical Records process costs across the five benchmarks. Suppose you are told that Practice #1 outsources its Maintain Medical Records process. What are the implications for FMMG? What would you recommend? Are you sure?
3. Four processes are activated for thoracic practices to be paid for their services: Obtain Insurance Authorization, Billing, Collect Payments and Resolve Collection Disputes. How does FMMG compare to other practices? What should FMMG do?
4. Practice #1 does not use physician's assistants (PAs) to assist its doctors in the operating room because Medicare does not reimburse for this expense. The rationale is that hospital-employed PAs can assist in the operating room. FMMG, however, does use PAs in the operating room. Should FMMG continue to use its PAs in the operating room?
5. Use Table 6 to compare FMMG's per unit cost of the four cost objects to the averages shown. Discuss. Do your answers here seem consistent to your answers to (1)? If so, explain why they should be consistent. If not, explain what is causing the inconsistencies.
6. Given your answer to (5), which process costs seem the most out of line (too high) for FMMG? Explain. Use the information in Table 7 to look at the process costs per unit.
7. In manufacturing, capacity represents the work that could be performed if all the resources of the factory are used to their full potential. For example, running three shifts a day, a factory should be able to produce a given output per year. A management accountant could then compute unit cost using “practical capacity” or ”actual utilization” as a base.

   In a manufacturing setting, the argument in favor of using practical capacity as a denominator to compute unit costs is that it eliminates the effect of volume differences on cost computation, and that it suggests what a product should cost if capacity is fully utilized. On the other hand, practical capacity can be arbitrary, masks the actual costs, and may be difficult for non-accountants to understand. What is the relevance of capacity considerations in a medical practice? To benchmark against other practices, should FMMG compute the cost of each unit of service delivered on a capacity base or an actual volume base? When would capacity or actual volume bases be most appropriate in medical practices?

Table 1
Process Costs and Practice Information

Practice #	1	3	7	FMMG	Database Average	Proc. Abbvn
TOTAL COST OF PROCESSES						
Service Patients in the Office	$383,011	$63,434	$74,908	$347,045	$212,046	**SPO**
Service Patients in the Hospital	$101,268	$71,120	$153,029	$186,764	$173,192	**SPH**
Obtain Insurance Authorization (a)	$41,797	$17,422	$9,122	$45,930	$28,991	**Auth**
Maintain Medical Records	$36,237	$59,118	$36,664	$69,705	$57,133	**MMR**
Schedule & Coordinate Surgeries	$20,720	$26,694	$44,435	$30,915	$36,415	**Sched**
Billing (a)	$51,584	$18,218	$41,001	$64,950	$45,352	**Bill**
Collect Payments (a)	$16,766	$6,445	$35,759	$54,199	$26,234	**Collect**
Resolve Collection Disputes (a)	$11,263	$6,751	$60,938	$58,333	$32,792	**Disputes**
Provide Information to 3rd Parties	$20,720	$17,558	$15,683	$16,989	$17,230	**3rd pties**
Teaching & Research	$0	$2,376	$0	$0	$297	**T&R**
Maintain Professional Education	$13,035	$18,467	$27,264	$31,118	$37,163	**MPE**
TOTAL	**$696,401**	**$307,603**	**$498,803**	**$905,948**	**$666,845**	
(a) Total Reimbursement Processes	$121,410	$48,836	$146,820	$223,412	$133,369	**Reimb**
Sustain & Manage Business	$326,987	$92,475	$117,640	$153,906	$170,211	**Sust Bus**
Maintain Facility	$88,785	$77,856	$145,458	$223,180	$121,203	**Facility**

Number of MDs	3	1	2	3	4.1
Number of no-charge office visits	868	418	333	1,188	1,038
Number of charge office visits	2,518	334	215	1,975	422
Number of charge hospital visits	570	54	28	779	97
Number of surgeries	546	263	208	639	727

Note: Four separate business processes are often bundled together and are known as the Reimbursement processes, and the total of these four processes is noted separately in (a). Two business processes (Sust Bus and Facility) are reallocated to the other processes in the ABC model, rather than directly to the cost objects, so the costs of these two processes are included in the other listed processes. The costs of each of these two business processes are listed for information purposes only.

Table 2
Breakdown of MMR Process Cost

Practice #	1	3	7	FMMG	Database Average	Exp. Abbvn
EXPENSE LINE ITEM						
Staff salaries-administrative	$1,212	$12,625	$14,855	$16,126	$13,214	**Sal-Adm**
Staff salaries-clinical	$0	$12,431	$1,276	$21,670	$4,873	**Sal-Clin**
Office supplies & postage	$121	$7,264	$5,233	$6,618	$6,713	**Ofc Sup**
Transcription service	$33,470	$0	$0	$0	$2,487	**Trns Svc**
Sustain business	$1,200	$13,254	$7,823	$12,436	$12,413	**Sust Bus**
Maintain facility	$234	$13,544	$7,477	$12,855	$17,433	**Facility**
TOTAL	**$36,237**	**$59,118**	**$36,664**	**$69,705**	**$57,133**	

Table 3 - Personnel at FMMG; Allocation of employee time to processes

Physicians		
Dr. Don Fannon	Thoracic Surgeon	Partner of FMMG
Dr. Dan Martens	Thoracic Surgeon	Partner of FMMG
Dr. Mark Stein	Thoracic Surgeon	Surgeon employee
Clinical Staff		
John Lee	Physician Assistant	Full-time
Nicholas Hunter	Physician Assistant	40%-time
Joann Wallace	Physician Assistant	40%-time
Administrative Staff		
Ms. Kathy Nielsen	Practice Manager	50%-time
Ms. Kelly Smith	Scheduling Coordinator	Full-time
Ms. Linda Evans	Administrative Assistant; Backup Surgery Scheduler	Full-time
Ms. Miriam Black	Billing and Collection Representative	Full-time
Ms. Dee Andrews	Billing and Collection Representative	Full-time
Ms. Susan Grant	Statistics Coordinator; Computer Systems Manager	60%-time

	Administrative Personnel						Clinical Personnel		
Process	50% Kathy	100% Kelly	100% Linda	100% Miriam	100% Dee	60% Susan	100% John	40% Nicholas	40% Joann
SPO		40	40	10	10		30	16	16
SPH		10	10				55	16	16
Auth		30	10						
MMR		10	20				5	4	4
Sched		5	5				5		
Bill			10	20	25				
Collect				30	20				
Disputes				30	25				
3rd pties			5						
MPE							5	4	4
Sust Bus	50			10	20	60			
Facility		5							
	50	100	100	100	100	60	100	40	40

Table 4
Breakdown of Reimbursement Processes

Practice #	1	3	7	FMMG	Database Average	Exp. Abbvn
Obtain Insurance Authorization - Expense Line Items						
Staff salaries-administrative	$12,646	$5,172	$4,803	$21,501	$8,551	**Sal-Adm**
Staff salaries-clinical	$0	$4,351	$0	$0	$2,400	**Sal-Clin**
Office supplies & postage	$4,733	$1,264	$324	$0	$4,707	**Ofc Sup**
Sustain business*	$9,898	$2,814	$1,852	$11,574	$6,281	**Sust Bus**
Maintain facility*	$14,520	$3,821	$2,143	$12,855	$7,052	**Facility**
TOTAL	**$41,797**	**$17,422**	**$9,122**	**$45,930**	**$28,991**	
Billing - Expense Line Items						
Staff salaries-administrative	$18,646	$10,102	$11,803	$29,564	$17,425	**Sal-Adm**
Staff salaries-clinical	$0	$0	$9,533	$0	$2,853	**Sal-Clin**
Office supplies & postage	$4,825	$1,564	$3,783	$6,617	$5,262	**Ofc Sup**
Sustain business*	$11,723	$2,814	$7,473	$15,914	$8,765	**Sust Bus**
Maintain facility*	$16,390	$3,738	$8,409	$12,855	$11,047	**Facility**
TOTAL	**$51,584**	**$18,218**	**$41,001**	**$64,950**	**$45,352**	
Collect Payments - Expense Line Items						
Staff salaries-administrative	$8,235	$2,512	$26,435	$26,876	$17,223	**Sal-Adm**
Office supplies & postage	$563	$0	$323	$0	$864	**Ofc Sup**
Sustain business*	$4,178	$1,242	$3,569	$14,467	$3,412	**Sust Bus**
Maintain facility*	$3,790	$2,691	$5,432	$12,856	$4,735	**Facility**
TOTAL	**$16,766**	**$6,445**	**$35,759**	**$54,199**	**$26,234**	
Resolve Collection Disputes - Expense Line Items						
Staff salaries-administrative	$3,253	$2,817	$17,541	$29,564	$12,633	**Sal-Adm**
Staff salaries-clinical	$0	$0	$15,632	$0	$1,240	**Sal-Clin**
Office supplies & postage	$313	$247	$520	$0	$890	**Ofc Sup**
Sustain business*	$3,743	$1,642	$12,678	$15,914	$8,765	**Sust Bus**
Maintain facility*	$3,954	$2,045	$14,567	$12,855	$9,264	**Facility**
TOTAL	**$11,263**	**$6,751**	**$60,938**	**$58,333**	**$32,792**	

* Sustain business and Maintain facility are two business processes that are reallocated to the other business processes, rather than to the final cost objects directly.

Table 5
Breakdown of Service Patients in the Hospital Process

Practice #	1	FMMG	Database Average	Exp. Abbvn
Expense Line Items				
Staff salaries-administrative	$24,803	$10,751	$18,521	**Sal-Adm**
Staff salaries-clinical (RNs)	$39,223	$0	$18,870	**Sal-Clin-RNs**
Staff salaries-clinical (PAs)	$0	$145,063	$101,290	**Sal-Clin-PAs**
Sustain business	$37,242	$30,950	$34,511	**Sust Bus**
TOTAL	**$101,268**	**$186,764**	**$173,192**	

Table 6
Unit Costs

Practice #	1	3	7	FMMG	Database Average
No-charge office visit	$133	$157	$236	$139	$190
Charge office visit	$149	$187	$330	$169	$227
Charge hospital visit	$24	$82	$178	$45	$66
Surgery	$353	$666	$1,656	$581	$505

Table 7
Breakdown of Unit Costs

Practice #	1	3	7	FMMG	Database Average	Exp. Abbvn
Process costs in a no-charge office visit						
Service Patients in the Office	$113	$85	$137	$110	$145	**SPO**
Maintain Medical Records	$8	$55	$47	$15	$25	**MMR**
Billing	$12	$17	$52	$14	$20	**Billing**
TOTAL	**$133**	**$157**	**$236**	**$139**	**$190**	

Practice #	1	3	7	FMMG	Database Average	Exp. Abbvn
Process costs in a charge office visit						
Service Patients in the Office	$113	$85	$137	$110	$145	**SPO**
Maintain Medical Records	$8	$55	$47	$15	$25	**MMR**
Billing	$12	$17	$52	$14	$20	**Billing**
Collect Payments	$4	$10	$80	$16	$21	**Collect**
Obtain Insurance Authorization	$12	$20	$14	$14	$16	**Auth**
TOTAL	**$149**	**$187**	**$330**	**$169**	**$227**	

Practice #	1	3	7	FMMG	Database Average	Exp. Abbvn
Process costs in a surgery						
Maintain Medical Records	$8	$55	$47	$15	$25	**MMR**
Billing	$12	$17	$52	$14	$20	**Billing**
Collect Payments	$4	$10	$80	$16	$21	**Collect**
Obtain Insurance Authorization	$23	$41	$29	$28	$31	**Auth**
Service Patients in the Hospital	$185	$270	$736	$292	$238	**SPH**
Schedule & Coordinate Surgeries	$38	$101	$214	$49	$50	**Sched**
Resolve Collection Disputes	$21	$26	$293	$91	$45	**Disputes**
Provide Information to 3rd Parties	$38	$67	$75	$27	$24	**3rd pties**
Teaching & Research	$0	$9	$0	$0	$0	**T&R**
Maintain Professional Education	$24	$70	$130	$49	$51	**MPE**
TOTAL	**$353**	**$666**	**$1,656**	**$581**	**$505**	

Table 8
Medical and Business Activities (Processes)

(1) Service Patients in Office

This is the process of treating and managing patients during office visits. Two categories of patients are seen this way: Initial office visit and post-op visits. The process includes all activities necessary to service the patients including taking patient history, scheduling appointments, preparing examination rooms, typing prescriptions, ordering tests, answering patient/family questions (in person and on the phone), transcribe dictation, complete disability forms, etc. This process includes providing information and reports to the referring physician. The process does not include maintaining medical records or obtaining insurance authorization – these are separate processes.

(2) Service Patients in Hospital and Other Facilities

This is the process of treating patients in the hospital and interacting with patients and family in the hospital. It includes making rounds, examining patients, etc.

(3) Obtain Insurance Authorization

This is the process of verifying insurance coverage, contacting the insurance company, HMO, or Workers' Compensation to obtain permission to provide services to a patient, etc.

(4) Maintain Medical Records

This is the process of collecting, entering and copying information for patients' medical charts. It includes pulling charts and re-filing charts, etc.

(5) Schedule and Coordinate Surgery Patients in Hospital

This is the process of keeping track of patients in the hospital. It includes arranging patient admissions, managing transportation of patients, scheduling physician rounds and surgeries, keeping track of every patient in the hospital: where they are and why they are there, delivering and picking up medical records, recording all daily physician services, scheduling physician meetings, etc.

(6) Billing

This is the process of recording patient charges for services rendered and submitting claims to insurance companies, Medicare, HMO, Workers' Compensation, etc.

(7) Collect Payments

This process includes collecting funds from individuals, insurance companies, HMOs, etc., maintaining accounts receivable records, making bank deposits, etc.

(8) Resolve Collection Disputes and Re-Bill Charges

This is the process of evaluating EOBs and working with insurance companies, HMOs, etc. to resolve payment/billing disputes, submitting additional information to payors, re-billing, etc.

(9) Provide Information to Third Parties

This process involves providing information to third parties, such as attorneys, insurance companies, etc. It does not include providing information to the referring physician.

(10 Teaching & Research

This is the process of conducting medical research and teaching medical students, interns and residents.

(11) Maintain Professional Education

This is the process of the physicians and office staff maintaining their respective intellectual capital.

(12) Sustain Business by Managing and Coordinating Practice

This is the process of running the business side of a medical practice. Activities include general office management, STS database reporting, accounting, marketing, negotiating contracts, complying with regulatory requirements, managing human resources, taxes, etc.

(13) Maintain Facility

This is the process of maintaining an environment in which to practice medicine and run the business. It includes negotiating leases, acquiring medical and office equipment, installing communications systems, etc.

Table 9
Costs Objects

The four cost objects in this study are:

- No-charge office visits in global period
- Chargeable office visits
- Chargeable hospital visits
- Surgeries

A distinction is made between chargeable and no-charge office visits because they consume activities differently. No-charge office visits are post-surgical visits (usually within the 90-day "global period" following surgery) that are included in the cost of a surgery. No-charge office visits do not require the staff to obtain insurance authorization (because the authorization for the surgery includes the follow-up office visits) or to process the collection of payments. However, a bill for $0 is prepared for a no-charge office visit. Therefore, the CPT codes for chargeable office visits were bundled as a separate cost object from the CPT codes for no-charge office visits.

All chargeable office visits, regardless of length or physician services provided, are considered as a single cost object because these office visits consume practice expense at about the same rate.

A chargeable hospital visit does not usually require insurance authorization as this authorization is linked to the surgery, and it does not consume any office-related processes.

All surgeries, regardless of complexity, consumed about the same amount of practice expense. Therefore, all surgical CPT codes were bundled together as the cost object "surgeries".

Work Flow Case:

Linking Accounting, Marketing, and Production in an Experiential Exercise

Charlene W. Spoede, Ph.D. , CPA, CMA, CFM, PMP
Professor
Accounting Department
Box 98002
Baylor University
Waco, TX 76798
254-710-4763

Marjorie J. Cooper, Ph.D.
Professor
Marketing Department
Box 98007
Baylor University
Waco, TX 76798
254-710-4951

James R. Holt, Ph.D., P.E.
Associate Professor
Department of Engineering Management
Washington State University
14204 NE Salmon Creek Avenue
Vancouver, WA 98686
360-546-9508

Work Flow Case: Linking Marketing, Production, and Accounting in an Experiential Exercise

Abstract

This case involves a simple classroom exercise that enables participants to experience the negative effects of widely accepted but flawed assumptions about running a business. Participants learn how these negative effects extend from scheduling, work flows and inventory management to impact due-date performance and lead times, ultimately to affect customers and the organization's ability to establish a sustainable competitive advantage. Work is released into the system in the random order in which it arrives. Results typically include long processing times for individual orders and wide distributions of finish times that make it difficult for the company to fulfill promises made to customers. After the first scenario, participants realize the source of the problem, but don't know how to implement corrective action. The second scenario involves identification of the solution. By identifying the system's constraint, exploiting it, and subordinating the system to the constraint, results improve dramatically: shorter, more uniform processing times, work in process inventory reduction, and a chaos-free work environment. Implications are also discussed in terms of allocating resources, measuring and controlling sales force activities, and, more importantly, overall profitability. This case demonstrates why Production, Marketing, and Accounting frequently are at odds, to the detriment of customer service and the global objectives of the company, and how the conflict can be resolved.

Part I of the case should be conducted by groups of five or six individuals in a classroom setting to insure case procedures are followed. (The case details should be given out in advance so students can read about the case and be prepared for the exercise.) You should allow at least one hour and twenty minutes for Scenarios one and two. Oral answers to Part I questions also may be elicited at this time.

Part II questions should be answered individually by each group, preferably not at the same time as Part I to allow time to reflect on the experience. Answers to Part II may be provided in the form of class discussion, but answers (formal or informal) should be prepared by each group.

Work Flow Case: Linking Marketing, Production, and Accounting in an Experiential Exercise

For nearly 50 years at least some companies have realized the need for and commitment to functional integration. For example, General Electric Company's *Annual Report, 1952 stated:*

> It [the marketing concept] introduces the marketing person at the beginning rather than at the end of the production cycle and integrates marketing into each phase of the business. Thus, marketing, through its studies and research, will establish for the engineer, the design and manufacturing person, what the customer wants in a given product, what price he or she is willing to pay, and where and when it will be wanted. Marketing will have authority in product planning, production scheduling, and inventory control, as well as sales, distribution, and servicing of the product. *(Note: Language in the original, now considered sexist, has been changed).*

Today, more and more individuals and companies are calling for functional integration. However, although isolated examples exist of successful functional collaboration, the norm is still for companies to struggle with essentially the same conflicts that have confounded managers for decades (Crittenden 1992; Crittenden, Gardiner, and Stam 1993; Shapiro 1988).

For example, Marketing attributes insufficient plant capacity to the problems with getting orders out on time, while Manufacturing asks for more accurate sales forecasts. Marketing complains about lead times that are too long, and Manufacturing asks for stable sales forecasts. Marketing frets over the right merchandise never being available in inventory; Manufacturing responds that "we can't keep everything in inventory," while Accounting echoes Manufacturing, citing the costs of maintaining large inventories. Marketing demands product variety; Manufacturing objects that a broad product line forces short, uneconomical production runs. Accounting concurs with Manufacturing. Marketing objects that prices are too high to be competitive in the marketplace; Manufacturing and Accounting respond that fast delivery, broad variety, rapid response to change, and high quality at low cost are impossible and impractical (Shapiro 1977).

The purpose of this case is to (1) allow you to experience an exercise that will assist you in grasping the key elements of the conflicts between Marketing, Production, and Accounting as played out in a simple production environment, (2) show you the implications for customer service and satisfaction that derive from these conflicts, (3) challenge you to create a solution to these conflicts, (4) understand how traditional accounting contributes to functional conflicts, and (5) briefly consider the far-reaching

ramifications of this exercise on any and all environments that rely on processes—i.e. a series of interdependent steps with inherent variability—to serve customers.

Background

Work flows are evident in all organizations, whether production, project, or service. Work flows are particularly obvious in a job shop environment.

In a job shop environment, machines typically are organized in a functional layout such that machines with similar processing characteristics are grouped together in work centers. (Dedicated lines and manufacturing cell arrangements are exceptions to the typical functional arrangement, but both these specialized layouts are very capital intensive and are not product flexible.) Each order that is released follows a specific routing or processing sequence through the work centers.

Most production facilities have a variety of routings and loads (setup and run times), which creates a complex environment that is difficult to schedule and control. Dedicated lines and manufacturing cells are an attempt to address this complex environment. The bottlenecks or constraints often seem to shift from one work center to another, making it even more difficult to determine actual order completion and shipping dates. Moreover, disruptions in these schedules—whether to satisfy Marketing's demands for better service to a particular customer or due to a mechanical breakdown in the production process—further complicate scheduling. The inevitable result is that many companies experience a frustrating struggle to reduce lead times and achieve consistent on-time delivery.

Job shop environments range from *high variety/low volume,* making unique one-of-a-kind products—such as a tooling shop—to *low variety/high volume,* producing standardized products in batches. This exercise effectively introduces and demonstrates the applicability of Theory of Constraints' *Drum-Buffer-Rope* technique as the solution to a variety of problems found in any conceivable job shop environment. This exercise also exposes the root cause (disease) that drives the many conflicts (symptoms) between Marketing, Manufacturing, and Accounting.

Theory of Constraints and Drum-Buffer-Rope

In his landmark book, *The Goal,* Eli Goldratt (1986) introduced his Five Focusing Steps for managing the process of ongoing improvement. The Theory of Constraints (TOC) is derived from these five steps:

1. *Identify the constraint.* The constraint is the "weakest link in the chain." Goldratt makes the point that the weakest link in a chain determines the maximum strength of the chain and applies this analogy to the steps in the production process in a manufacturing plant. The slowest entity in a

closed system of interdependent steps dictates the maximum achievable production rate of the entire system.

2. *Decide how to exploit the constraint in the system.* Because productivity depends on the performance of the constraint, it must be utilized to its maximum capacity or throughput (product sales) will be lost.
3. *Subordinate everything else to the decisions taken regarding the constraint.* All the other components of the system must work to guarantee the full-speed functioning of the constraint. Now the constraint is producing to the maximum. How can throughput be further increased?
4. *Elevate the constraint.* Buy a new machine, add another operator, add an additional shift, or authorize overtime. Any action that increases the capacity at the constraint is considered an elevation of the constraint. At this point, if the constraint is no longer the constraint, Step 5 is in order.
5. *Do not allow inertia to become the constraint; go back to Step 1 and start over.*

Goldratt's Drum-Buffer-Rope (DBR), also introduced in *The Goal* and further elucidated in *The Race* (Goldratt and Fox 1986), protects the constraint from the variability of the processes which impact it. DBR satisfies the requirement to manage the production process so the constraint is never starved.

The focus of DBR is managing the buffer, which is, in essence, time bought to protect the constraint. It consists of three parts (Srikanth and Umble 1997):

1. *Setting the drum. The orders that are to be processed are scheduled through the constraint using all available capacity. Since the system is subordinated to the constraint—that is, the constraint determines the quantity and timing of the throughput for the system—the flow rate through the constraint (the drum) sets the pace for the entire system.*
2. *Developing the buffer. Since the constraint should never be idle, the location of the buffer is in front of the constraint. Sufficient orders should be maintained in the buffer such that the constraint is never idle or starved for work due to disruptions elsewhere in the system.*
3. *Tying the rope. Every work center must be synchronized to the requirements of the master production schedule so that the plan can be efficiently executed. That is the function of the rope. However, if the constraint schedule has been determined and the drum set, materials can be released*

into the system as dictated by the constraint's rate of production to support the constraint and shipping schedules. Since all other work centers have more capacity than the constraint and the constraint has been further protected by the buffer, materials have sufficient time, even with the inevitable variability and disruptions of a manufacturing environment, to move through the system so that the constraint and shipping schedules are protected. Only the constraint resource and materials releases must be carefully scheduled; individual non-constraint work centers process work as it arrives, first-in, first-out (FIFO).

The Classroom Exercise: The Job Shop Game

The Work Flow Case is extremely robust and may be tailored to a job shop, a project management or a service environment by merely making a few cosmetic changes. For example, by showing the routings horizontally as a project net and the "jobs" as "projects," the game mimics a very simple multi-project environment. The exercise described here simulates a job shop environment.

The Job Shop Game is played by releasing orders, one at a time, into the shop and sending them through four different product processes. The orders are monitored to determine how long it takes the "shop" (a group of five or six individuals) to complete each order (flow time). The number of process days is recorded on a chart, and the results are analyzed.

Two scenarios are used to show first the problem of escalating production times and high variability of completion times, and then the elegant simplicity of the buffer solution.

1. In the first scenario, orders are released at the rate of one per day.

2. In the second scenario, orders are released into the system based on how much work is in the system (the buffer). Each group may decide how much work may be allowed into the system, or the instructor may assign an amount.

Routings

The process routing, which represents the necessary sequence of operations, is on each order card, and there are four different kinds of order cards or routing sequences (Figure 1) in the game.

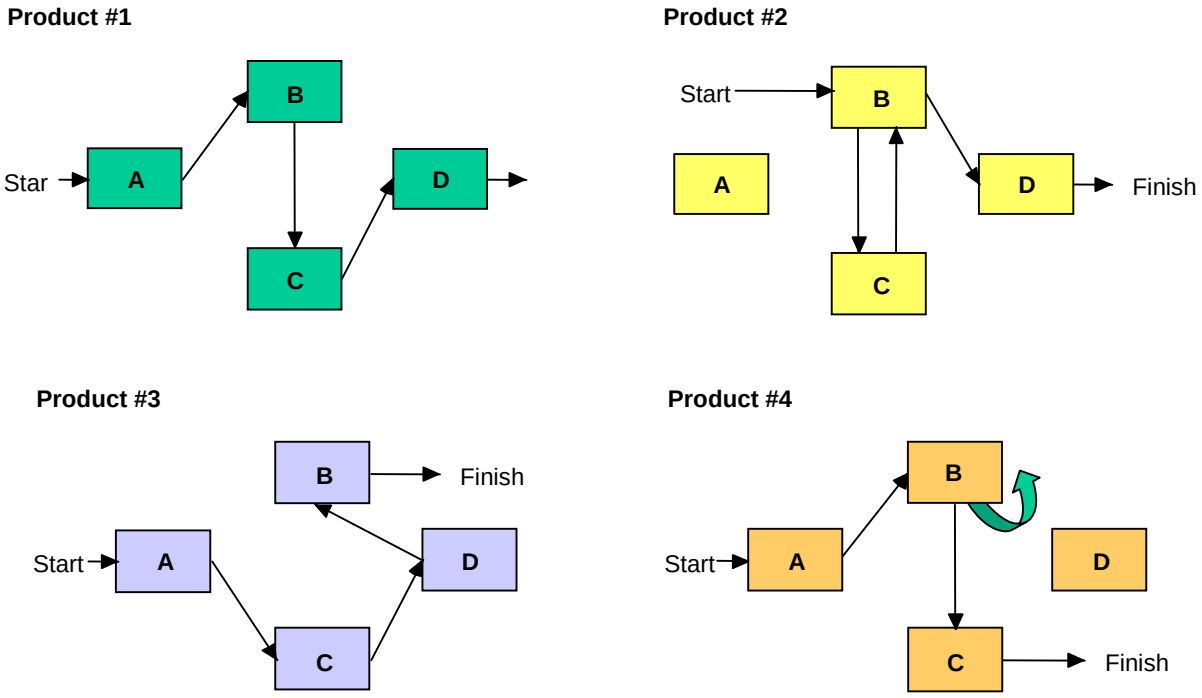


Figure 1
Process Routings
(the required sequence of operations)

Orders must be processed by the work centers in the same sequence as specified on each order card (see example for Product 3 in Figure 2).

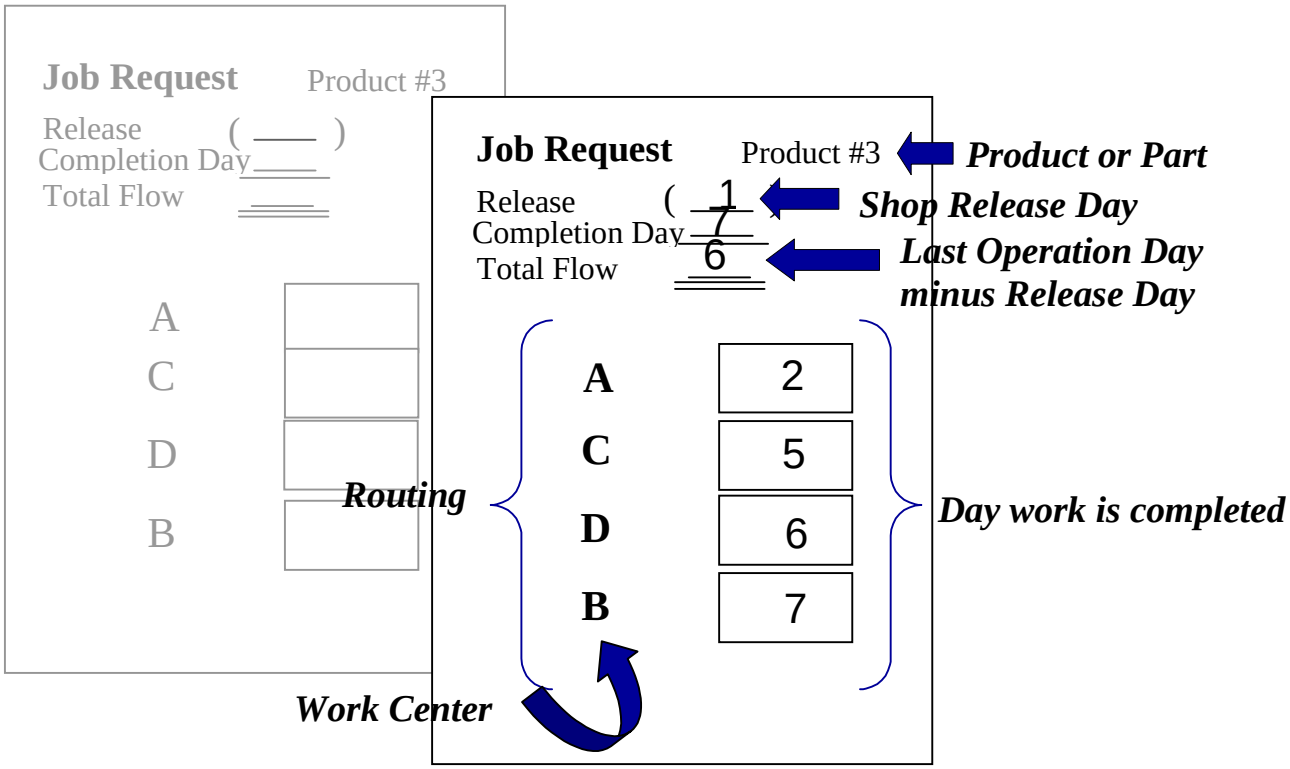


Figure 2
Work Order Card for Product #3

Work Centers and Capacities

As shown in Figure 2, this organization has four work centers (A-D), and each work center has one resource (machine). The processing capability of each work center is specialized; no alternate routings are allowed. And each resource has capacity to perform one operation per day.

Products

There are 24 order cards and each order card has a product number from one to four on it, representing the specific order that must be completed. (The exercise may be conducted with 12 to 30 or so order cards, depending on the time available.) Each order card may represent a unique product (high variety/low volume) or a batch of parts moving through four stages of production (low variety/high volume). (In alternative environments, the work order may represent a series of sequential steps in performing a service, such as gaining approval for a mortgage application, completing a financial audit, or developing a promotional campaign or other project-management type process.)

Role Requirements

The following roles are required for each group (5 or 6 students) involved in the game:

- Scheduler – Releases orders into the system
- Four Work Center Operators – Process the work at the rate of one job per day per work center according to the routing through work centers A, B, C, and D given on the order card.
- Flow Control Monitor – Calculates the total days required to process the order and plots the results according to the number of flow days for each job released. (If necessary, this task may be performed by the scheduler.)
- Monitors (optional) – Make sure game rules are understood and obeyed.

When the instructor calls out "Shop day number X," the Scheduler makes a decision to release or not to release an order card according to the specific scenario instruction. When the instructor calls out "Write . . .," the Scheduler writes the shop day on the "Release Day" line on the order card. When the instructor calls out "Pass . . .," the Scheduler passes the order card to the queue of the first work center listed on that day's order card.

Each work center can only process **a maximum of one order per day**. When the instructor calls out "Shop day number X," each work center operator takes **one** order card from his or her queue (if there are any order cards in the queue) and writes the shop day in the appropriate "Routing Box" on the order card. When the instructor calls out "Pass . . .," each operator passes the order card to the next work center queue on the routing or to the Flow Control Monitor if the order card is completely filled out. For best results, the operator should process all orders in a FIFO sequence.

The Flow Control Monitor calculates the flow days for each order card by subtracting the "Release Day" from the "Shop Day" recorded in the last "Routing Box" and writes the flow days on the "Total Flow Days" line on the order card. When each scenario is complete, the Flow Control Monitor also plots the data from the order cards – first placing the job sheets in release day sequence and then recording the number of flow days for each job, then noting the number of jobs completed in a certain amount of days to form a rough histogram (see example in Figure 3).

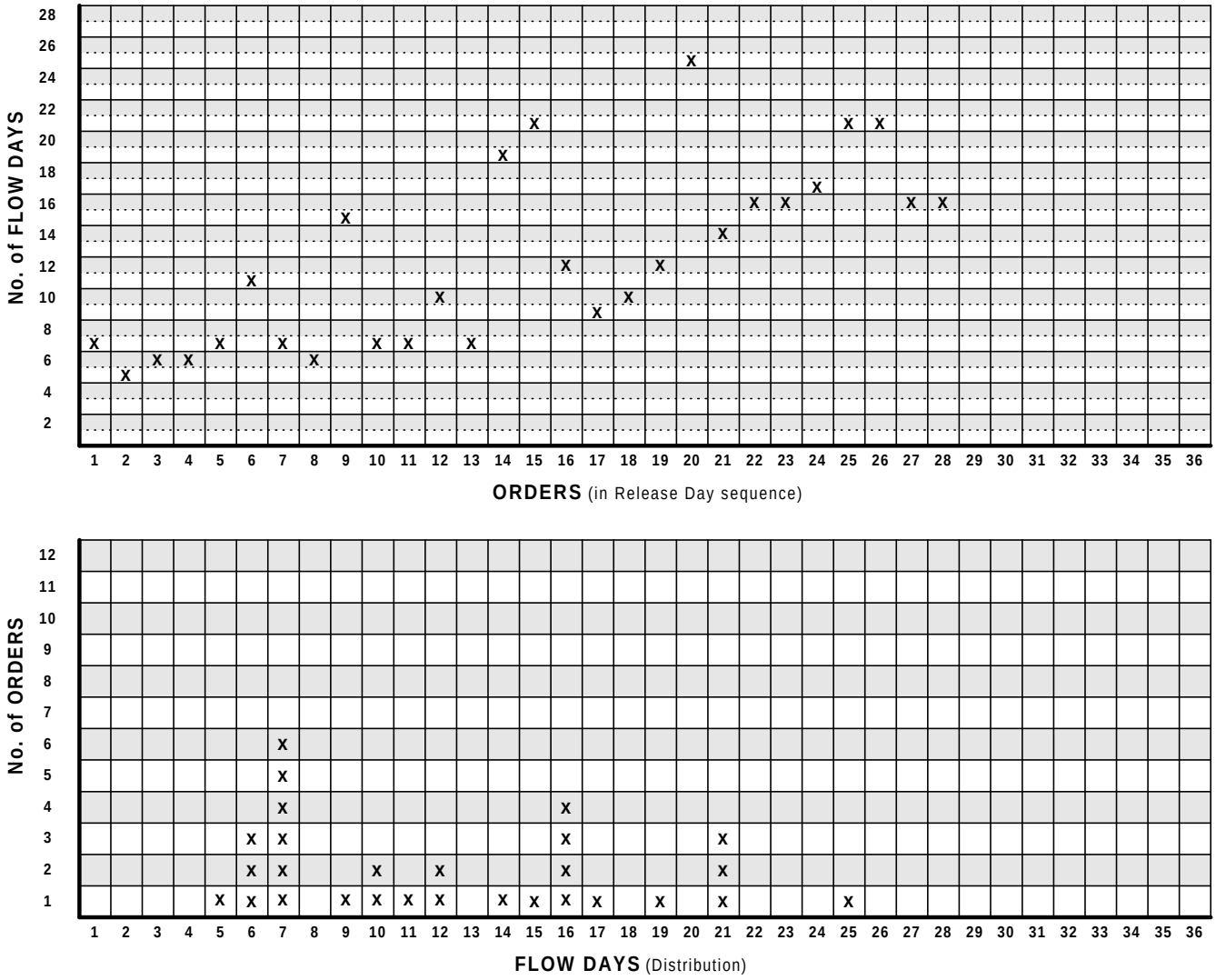


Figure 3
Traditional Scheduling Results

Part I (to be conducted in class): General Instructions

The instructor controls the rate of play and will call out shop days until all the orders have been completely processed. All participants must follow the cadence and refrain from working ahead or chaos will result, and the point of the game will be lost. The instructor is like a conductor, and everyone must follow the beat or the resulting sound will not be beautiful music—just a lot of noise.

Scenario #1

One order (randomly determined) will be released into the system each day. No work can be accomplished on that day so processing may not begin before the next day. Each

resource must process only one order per day, no matter how big the queue of work (no overtime, no assistance from other resources). Once all jobs have been entered into the system, processing will continue until all work has been flushed from the system.

Scenario #1 Questions:

1. What appears to be happening to the cycle time (time in the system) of orders?
2. What is the constraint of the system?
3. How much variability of cycle times did you experience?
4. What was the work environment like (especially for the constraint resource)?
5. What delivery date for the **next** order seems reasonable?

Scenario #2

Following good drum-buffer-rope technique, decide how much "protection" (number of constraint tasks that have not been completed) should be in your system on any day. If that amount of work is already in the system, the Scheduler will not release new work on that day. Jobs are released into the system in the same order as Scenario #1, but may not be released each day, at the option of the Scheduler. Continue processing until all work has been entered into the system and then completed.

Scenario #2 Questions:

1. Was there a significant improvement in cycle times?
2. Was there a significant improvement in variability of cycle time?
3. Compare the work environment with that experienced in Scenario #1.
4. What delivery date for the **next** order seems reasonable?

Part II: Management Accounting Implications

Assume that the company has achieved competitive advantage through faster lead times and more dependable delivery than other companies in its industry (that is, Scenario 2 exists). New decisions must be made. Because each job requires the same quantity of labor, and assuming that all workers are paid approximately the same wages, the total labor cost of each of the four types of jobs will be identical. If overhead is assigned based on labor (as it still is in most companies), the overhead also will be identical. However, each type of job requires different raw materials. The material cost for each of the four jobs is as follows:

Job 1	$2,000
Job 2	$3,000
Job 3	$1,000
Job 4	$1,500

Standard labor cost is $12 per hour ($96 per day); standard overhead cost is 350% of direct labor costs. Selling price is based on achieving a 30% margin over selling price (a margin of 42.857+% of total production cost).

Part II Requirements:

Each group should prepare answers to the following items.

1. Compute the gross margin for each of the four jobs using traditional standard accounting.
2. Which jobs would a traditional cost system identify as the "best"? (Provide a priority ranking.)
3. If salespeople are paid commissions based on gross revenue or gross margin generated, which jobs will they push to customers? (Provide a priority ranking.)
4. Given traditional efficiency evaluation measures, which jobs would production want to work on? (Provide a priority ranking.)
5. Which jobs will make the company the most money? (Provide a priority ranking.)
6. Discuss how traditional management accounting techniques contribute to functional conflicts.
7. Would activity-based cost accounting solve the problems generated by traditional cost accounting? Explain.

References

Crittenden, Victoria L. (1992), "Close the Marketing/Manufacturing Gap," *Sloan Management Review*, (Spring), 41-52.

Crittenden, Victoria L., Lorraine R. Gardiner, and Antonie Stam (1993), "Reducing Conflict Between Marketing and Manufacturing," *Industrial Marketing Management*, (November), 299-309.

General Electric Company (1952), *Annual Report*, Fairfield, CT, 21.

Goldratt, Eliyahu M. and Jeff Cox (1986), *The Goal*, Croton-on-Hudson, NY: The North River Press, Inc.

Goldratt, Eliyahu M. and Robert E. Fox (1986), *The Race*, Croton-on-Hudson, NY: The North River Press, Inc.

Shapiro, Benson P. (1977), "Can Marketing and Manufacturing Coexist?" *Harvard Business Review*, (September-October), 104-114.

Shapiro, Benson P. (1988), "What the Hell Is 'Market Oriented'? *Harvard Business Review*, (November-December), 119-125.

Shapiro, Benson P. (1989), "Functional Integration: Getting All The Troops To Work Together," Working Paper, Harvard Business School, Boston, MA.

Srikanth, Mokshagundam L. and Michael Umble (1997), Synchronous Management, Vol. 1, Guilford, CT: The Spectrum Publishing Company.

ESKOM

Case Study

Enrico Uliana
Dept of Accounting - University of Cape Town

Cliff Cooper
Productivity Consultant - Eskom

Contact details
Enrico Uliana
Dept of Accounting
University of Cape Town
Private Bag
7700 Rondebosch
South Africa

Email: euliana@commerce.uct.ac.za
Phone: +27 21 6502217
Fax: +27 21 6895592

Eskom

Allen Morgan the chief executive officer of Eskom, South Africa's electricity utility, was discussing the 1999 financial results (Exhibits 2-4) with Willem Kok, the Senior General Manager of Finance. He was concerned about the recent performance.

AM: *Willem, I'm worried about the downward trend in net profit, in 1999 it fell by about R300[1] million following a fall of some R600 million in 1998.*

WK: *I would not be that concerned about the downward trend. In 1998 we were severely hit by the emerging market crisis. Last year we paid out a bundle in severance packages due to the restructuring process in the company. A look at the 1999 productivity statement shows a figure of R426m negative productivity from restructuring. These "one off" costs are mainly severance packages, and were the result of trying to build efficiencies into the business. Also, the economy has gone through a down swing, worse than what was initially anticipated. In fact, productivity was up R75 million.*

AM: *True enough, but the productivity statement for 1999 gives enough reason for concern. In it you will see the drop in adjusted net profit for 1999 was R714m. The profit is adjusted and the resulting change is further decomposed showing the productivity gain you refer to. I'm worried that we may be fooling ourselves, or that others may think we are trying to fool them.*

WK*: No we're not. Productivity is the result of efficiency and capacity utilisation. Efficiency concentrates on the resource allocation and consumption while capacity utilization is about product volumes – in other words; where the fixed capacity of a resource base is being better used through increased sales.*

AM: *Hold on. There too many facets to this measure. Willem will you please do a summary report on how to calculate the figures. I think the board is more interested in the determinants than the technical computations, so make sure to indicate what would influence changes and so on.*

Eskom focuses on improving productivity to attain its goal of becoming the lowest cost electricity producer in the world. It has published a productivity statement as part of its annual report since 1993. Arguably productivity has become even more important due to the company's objective of electrifying previously disadvantaged communities as well as coping with the threat of future competition. The focus is not on productivity accounting per se but on the continuous and sustainable improvement in productivity. Productivity accounting is one of the ways Finance (Management

[1] US$1 = R7

Accounting) can support the business in its quest to maximise stakeholder wealth through wealth creation and not only by inflationary pricing. However, Allen Morgan is concerned that the current strategies and policies may no longer be appropriate, given the divergent challenges and objectives facing Eskom (Exhibit 1). Allen is concerned that management's focus on productivity accounting may be misguided and unrealistic especially in light of the productivity losses in the last two years. Allen called a meeting with members of the top management to discuss his concerns.

Historical Background

Eskom was established in 1923 with the blessing of government. In its first year, the utility sold 80 million kilowatt-hours of electricity. In 1927 the first hydro power station began commercial operations at Sabie and in the same year Eskom generated electricity with pulverised fuel (coal). In 1984 the Koeberg nuclear power station, which used the uranium enrichment process, developed in South Africa, was commissioned. The extensive use of coal has made Eskom one of the world's lowest cost producers of electricity.

At the time of South Africa's first democratic election in 1994 Eskom committed itself to electrifying 1,75 million homes, as well as schools and clinics by the year 2000. They achieved this goal in November 1999. Eskom was also committed to bring the real price of electricity down in the same period. By 1997 Eskom's electrification program connected 800 new households every working day. By the same year Eskom had commissioned nearly half the dry-cooled plant capacity worldwide. In 1998 the Eskom Amendment Act made the State the sole owner of Eskom and also removed the tax exemption previously enjoyed. Furthermore, the Act made provision to have Eskom incorporated as a limited liability company with share capital.

Eskom's Business

Eskom generates, transmits and distributes electricity to industrial, mining, commercial, agricultural and residential customers and to re-distributors. It sells approximately 42% of its electricity to local authorities, which resell it to end-users. Eskom also supplies power directly to communities, small businesses and households, as well as to neighbouring countries. It aims to provide the means and systems by which the electricity needs of the consumer may be satisfied in the most cost-effective manner, subject to resource constraints and the national interest. The organisation's objectives (Exhibit 1) are diverse as it tries to balance the requirements of shareholders and national interests.

Electricity is generated through either coal burning, hydro or nuclear power stations and to a limited extent in South Africa, via gas. Eskom obtains approximately 80% of its electricity from coal burning power stations. Coal is a scarce natural resource which constitutes some 30% of the total cost of generation. It is estimated that the coal reserves will only last for another 30 years. Most of South Africa's high quality coal is exported while Eskom mostly uses lower quality coal. Due to the

depressed growth in demand for electricity, coal purchases have been reviewed. Co-operation with suppliers has reduced the cost and secured greater flexibility in deliveries and equitable risk sharing.

The National Water Act and its associated strategies such as the Water Pricing Strategy recognise Eskom as a strategic water user. This together with developments at the Cahorra Bassa dam on the Mozambique border will partially assist in providing an alternative for coal power. Eskom has excess capacity, but the depletion in coal reserves and negative public opinion associated with nuclear power creates a new challenge.

Eskom currently operates 24 power stations with a capacity of about 40 000 megawatts and is among the five largest utilities in the world in terms of size and sales. It supplies 98% of South Africa's electricity requirements and more than half of the electricity generated on the African continent. Eskom operates the largest dry-cooled electricity generation plant in the world and is presently one of the lowest cost producers of electricity globally. However, five power stations have been mothballed due to excess capacity.

Eskom shares a vision with the other southern African countries of a southern African power grid. The Southern African Power Pool (SAPP) agreement was formalised at government and utility level in 1995. SAPP will enable the trading of electricity as far north as Zaire. Eskom supports the development of a regional transmission grid to encourage co-operation and accelerate economic growth in southern Africa. In 1999 the Aries-Kokerboom transmission line linking South Africa and Namibia was commissioned. This project will help boost the creation of a regional pool through which electricity can be traded between countries.

Financial Policy and Performance

Despite state ownership, Eskom is self-financing and run on strictly business principles for the benefit of its customers. To ensure long-term financial viability, Eskom applies a policy of recovering the real inflation adjusted cost of supplying electricity to customers each year and earning an appropriate real return on assets. The annual price increase is determined by the cost of supply, future requirements for expansion and the need, if any, to adjust the organisation's financial position. This strategy also ensures that the price changes are gradual, predictable and stable, and that financial viability is maintained in the long term. This policy has served Eskom well over the past nine years and, combined with the utilisation of Eskom's surplus generating capacity, has enabled Eskom to reduce the real price of electricity to customers. The preparation of current value financial statements demonstrates Eskom's use of current value accounting techniques to measure the effects of this policy, which is important considering the long-term nature and asset intensity of the business.

Eskom's objective of decreasing the real cost of electricity for the end-user by a cumulative 15% between January 1995 and the end of the year 2000, and to become the lowest cost electricity

producer in the world, led to a focus on increasing productivity to ensure that the organisation remains viable. The 1999 general price increase for electricity was 0,7% (1998: 1,9%) below the rate of inflation as measured by the average consumer price index. These efforts have contributed towards reducing the average inflation rate of South Africa.

Eskom's net profit for 1999 was R2 168 million (1998 R2 474 million). Eskom was pleased with the positive sales growth of 1,15% compared with the negative growth recorded in 1998 (Exhibit 5), which indicated a general upturn in the economy. Eskom's net revenue increased by 2,3% to R21 568 million. Eskom's financial health continues to improve and at year-end the debt-equity ratio was 0,83:1. Operating expenditure increased by 11,7% during 1999, which was significantly affected by the severance packages of R844 million (1998: R161 million). The retrenchments were undertaken to improve future efficiency within the organisation.

The Future of Eskom

Eskom's business currently consists of three divisions; generation, transmission and distribution. Management expects that government's energy policy will see the restructuring of Eskom into regulated and non-regulated business. Management foresees the following:

- Each of the separate divisions will be split off into separate companies and privatised;
- Eskom's Distribution Group will be separated from the organisation and merged with the distribution operations of those municipalities involved in the distribution of electricity, to create a maximum number of financially viable independent regional electricity distributors.
- Eskom's legislative monopoly will be revoked and Eskom will be expected to compete against the private sector as determined in the Government's White Paper on Energy Policy. A number of new players are expected to enter the market;
- Eskom intends to focus on the distribution of electricity and foresees the disposal of the transmission and generation divisions;
- The low sales growth in the local market will be counteracted by expansion into Africa and globally, and Eskom wishes to position itself as a competitive multinational (Exhibit 6).

Due to the above and to the policy of government to privatise parastatals, Eskom is currently experiencing an identity crisis. The company is currently a parastatal, but its future lies in the private sector. Management has the difficult task of balancing a number of conflicting objectives, such as:

- Participating in the Redistribution and Development Plan by electrifying previously disadvantaged communities;
- Absorbing the burden of income taxes, from which it was previously exempt;
- Becoming the lowest-cost producer of electricity in the world;
- Maintaining profitability and creating value for its shareholders after privatisation.

Productivity Accounting under the Spotlight

Eskom has focused on productivity since 1980. Under the guidance of the National Productivity Institute it limped along for a number of years, primarily because the correct people were not involved. As part of Eskom's productivity drive a number of key employees were appointed and trained in the application and uses of productivity accounting. The aim was to spread productivity accounting throughout organisation even to grass-roots level by linking remuneration to productivity performance. An early (1990) memo prepared by the management accounting manager summarises the basic principles of productivity accounting and the requirements for its successful implementation (Exhibit 7). In 1993 Eskom became the first company to publish a productivity statement in its annual financial report.

Management uses productivity as a proactive tool to achieve the objectives and not as an end in itself. They develop productivity improvement targets during the planning and budgeting process. This is done at the total business level as well as at group level such as generation, transmission and distribution. These targets are developed together with the senior management of each of the groups to support ownership of the targets. The business units were accountable for achieving their targets. The productivity accounting principles are being used more extensively within the business than was previously the case. Specific areas where the principles are being applied include:

- Integration into the capital investment decision-making in assessing the impact of the investment on the productivity performance of the business? Over what time does the investment become productivity neutral? As well as information on discounted cash flows each capital investment decision has to be supported by information on what the impact of the investment is on productivity performance of the total business as well as the group.
- Incorporation of the productivity results into the performance contracts of each business unit manager.

Allan Morgan met with Leo Gericke (CFO), Koos van Zyl (executive director, Technology), Wilmott Prusent (manager, Productivity Accounting), and Jake Lethuli the newly appointed executive director, Human Resources.

AM: *I'm concerned that with all the changes Eskom is facing, some of our policies and strategies may no longer be applicable. I would like to focus on productivity accounting in particular, due amongst other things to the negative productivity statistics of the last two years, as well as the ever-increasing amount of management time it requires. Jake, I know that productivity accounting is new to you. Perhaps Leo can give you a brief description of productivity accounting as we apply it.*

LG: *Sure, in its most basic terms productivity describes the relationship between actual inputs and actual outputs. It is primarily a measure over time, comparing the performance this year with previous years, and improvements achieved by the organisation. These may be measured by partial productivity measures, which focus on physical measures such as megawatts per employee. At*

Eskom we focus on total factor productivity which reflects the result of all the physical measures, as well as services and finance, in the change in net income. To calculate productivity in financial terms, we look at the difference between last year's Net Income and this year's. Let's assume we have a gain; we then analyse that gain to determine how much of the increase was due to productivity improvements, and how much was attributable to price-recovery and growth.

AM: *So we calculate these Total Productivity figures to report to our stakeholders or those of them that can get their minds around the concept. But what about the lower levels of management and the workers – what does productivity mean to them?*

JL: *Well, each staff member is paid an annual bonus based on the year's productivity gain. It still amazes me that the unions ever agreed to this. However, to my mind the biggest problem is that, apart from the top two hundred managerial and supervisory people, the majority of our employees have no idea why they are receiving this bonus or how it is calculated. I have a feeling that the unionised labour will not be happy with this for much longer, and may start requesting greater transparency from management.*

WP: *Jake is right, this is a problem. It's one of the reasons that we're trying to establish partial productivity indicators throughout the organisation. Until we can implement productivity accounting at a grass-roots level, we will never maximise productivity gains. We aimed the use of productivity accounting at senior and middle management level and not at the grass roots level. We do have a training program at grass roots level but this is what we call a productivity awareness program and deals mainly with the basic principles of what productivity is, how it can be improved and how the employee can influence it. The training of senior and middle management is done so that they understand the principles of productivity and can apply them when managing their business. Once it's up and running, people at all levels of the organisation will know exactly what they can do to improve productivity and how they will benefit from improved productivity. At present the total cake is divided by the number of employees to give virtually the same amount to each.*

JL: *We will have to be careful not to act contrary to our agreement with the unions regarding productivity accounting. Furthermore, the staff may associate productivity accounting with future retrenchments or job losses. The unions might think that we are only using productivity accounting to pull the wool over their eyes. I'd like to go back to something you mentioned earlier. The relationship between inputs and outputs is obviously the critical factor in determining productivity. In light of this, are the wide based retrenchments not skewing the figures?*

WP: *You could interpret it that way, but you have to remember that the retrenchments were done after it was found that certain departments were not functioning as efficiently as they should. Cutting the labour is not the cause of productivity increasing, it is rather the consequence of under utilisation*

of the assets in those departments. It should be noted that all the retrenchments were not forced but voluntary. The package was attractive enough to a certain level of employee. This initiative was also undertaken to create space to enable Eskom to reach its affirmative action targets.

KvZ: *But then would it not be more beneficial to the company to better employ that asset as opposed to cutting back on the labour?*

WP: *In some cases that would be the norm, but labour is more complicated. For instance, in certain departments there were just too many hands performing too few tasks. We have an obligation to be efficient and under these circumstances retrenchments presented the only solution. In other cases it was found that outsourcing that department is actually more beneficial to the company.*

JL: *It's not only the labour force that will be affected; since you implemented productivity accounting a lot of our top people have taken early retirement. Without good people we are unlikely to ever meet our objectives.*

KvZ*: We still have access to good people Productivity accounting has allowed us to replace a lot of full-time employees with consultants. More and more, we're focusing on our core business of generating, transmitting and distributing electricity. The overheads and fixed costs associated with consultants are just so much lower, and consultants are usually specialists in their fields. I do however agree with Jake that some key people are not that easy to replace. We are increasingly losing experienced people who are vital to the improvement of our business, and not only in the departments that we are outsourcing. It is also becoming increasingly difficult to entice competent, preferably black candidates away from the private sector. In short, the private sector pays so much more than we can. Training my own people is taking too long, to increase productivity in my department I need competent people desperately. It's a bit tough that you measure my performance based on productivity, but are unwilling to supply me with the inputs I need to be productive.*

WP: *I know, but it's not a perfect world! Every management system has its own unique challenges, and when you think about it, our system is relatively new. The cost to the organisation has been relatively low. The current cost of the function is approximately R2.2 million per year. There are five employees in the department. The time of the business unit management accountant is also relatively small. Their main involvement is with the half-yearly measurement and reporting of productivity performance as well as the integration into the annual budgeting process. The reports are not generated on a monthly basis. If Eskom wants to become the lowest cost electricity producer in the world, it's imperative that we improve our productivity. What we don't measure will never get done!*

JL: *So, some of the activities that were cut back inside the company are now performed by outsiders. Is this not just a method of window dressing the figures then? Moving the input out of the books; makes it seem if the assets left are actually working harder?*

WP*: Jake, remember that we're still streamlining the operations, retrenchments are a fact in these circumstances. It is not used as a method to increase the productivity figures per se, it is merely a measure to ensure more effective use of assets.*

KvZ: *There is an issue that I would imagine of vastly more importance. If we are constantly cutting back on labour for whatever the reason, why do we not have the unions all over us?*

AM: *All separations from the company are on a voluntary basis. The packages offered are very attractive. In addition our current employees participate in sharing gains from productivity improvements.*

JL: *This is true, last year we paid out more than 43% of our created value to employees. This way, an increase in wealth provides potential for greater welfare for all the participants in the organisation. The Productivity Statement shows us, which shareholders benefited and to what extent they will share in the created wealth.*

WP: *I think this is another important part of the whole productivity accounting issue. Not only do we know where the value is created but also to whom the benefit should go.*

LG: *The board needs to understand what a powerful strategic tool productivity accounting can be if applied correctly. It is not just about the numbers, that is so computerised we hardly touch the calculations, but they have to actually realise the potential of having this information.*

AM: *Leo, this is a bit of a curve ball, but why don't we just toss out Productivity Accounting? I'm being Devil's Advocate here, but that's my job. We've adopted this top-down measure that has some problems and which may, in fact, be contrary to some of our long-term strategies. I'm thinking of our employment equity targets, for instance. To achieve our targets we are going to have to employ a lot of previously disadvantaged people who will need extensive training, and who won't be fully productive for some years. We've also got the electrification of previously disadvantaged areas to consider, and our contribution to the African Renaissance. This could mean lower charge-out rates to certain areas for years to come. Times are changing; shouldn't we be looking at other, more appropriate measures to drive the business, such as EVA? I know we already apply EVA, but we don't focus on it in a big way.*

LG: *Allen, to address your first point: We adopted the top-down approach because it was easiest to implement and focused senior management's attention on productivity issues in the shortest time possible. Furthermore….*

KvZ: *Sorry to interrupt, but another problem has just occurred to me. How are you going to measure the productivity of service departments? Some departments provide a technical or maintenance function, they don't generate units of electricity for sale. How do you measure their productivity in a meaningful way?*

LG: *That's the beauty of Total Factor Productivity accounting, it incorporates all the resources required to generate wealth. I don't want to go into detail now, but my door is always open for a chat. I also have a number of excellent articles on Productivity Accounting, which I can copy for you.*

AM: *Leo, that would be great, but we also need to ask ourselves a few hard questions: Is Productivity Accounting appropriate for strategic decision-making? What real value is it adding to the organisation at present? Is it appropriate to continue using Productivity Accounting as the basis of a management incentive scheme? Can we develop a partial measurement system that would be meaningful to all areas of Eskom's activities, service departments included? Can we use the partial system to incentivise and reward the lower echelons of the workforce? What about the negative effects of Productivity Accounting; we've heard of a few today and there must be others – what are they and how do we deal with them? And the really big question – should we toss out Productivity Accounting as being inappropriate to the future of the business, and look at alternative measures?*

Questions

1. Prepare the summary report on productivity accounting for the board of Eskom that Allen Morgan asked of Willem Kok.
2. Evaluate the financial information to determine the success of Eskom's productivity accounting policy to date. Is this sustainable?
3. Is this a good performance measure and what are the benefits of it to Eskom. Specifically address the window-dressing concern.
4. Is productivity accounting a good basis for bonuses paid to management and labour?
5. Evaluate productivity accounting as a strategic tool. Would EVA be better?

Exhibit 1

Eskom Objectives

- Reconfiguring the business from a government department to a company;
- Repositioning the non-regulated business to maximise the value from existing subsidiaries;
- Black economic empowerment;
- Human resource mobilisation through education, training and management;
- Implementing employment equity by changing the staff profile so that 50% of management, professional and supervisory staff shall be black South Africans by the end of 2000 and to include 20% women and 0.5% disabled persons by 2004;
- Reducing the real price of electricity by 15% by the end of 2000;
- Electrification of an additional 1,75 million homes between 1994 and 2000;
- Protecting the environment;
- Maintaining financial independence;
- Excellent technical performance; and
- Maintaining financial viability with efficient use of resources in the long-term.

Source: Eskom Annual Report 1999. The Annual Report includes key performance indicators, targets and results.

Exhibit 2

Eskom: 5-year Financial Review

31 December	1999 Rm	1998 Rm	1997 Rm	1996 Rm	1995 Rm
Financial position					
Total reserves	28 975	27 805	25 029	21 893	18 821
Long-term provisions	5 240	4 783	1 979	1 539	1 177
Financial market liabilities	37 283	38 424	34 345	32 610	33 911
Trade, other payables and provisions	3 995	4 073	3 930	4 173	3 589
Total assets	75 493	75 085	65 283	60 215	57 498
Operations					
Revenue	21 568	21 074	20 448	18 687	17 114
Operating expenditure	(17 027)	(15 242)	(14 016)	(12 421)	(11 315)
Net operating income	4 541	5 832	6 432	6 266	5 799
Interest income	1 261	1 156	1 008	1 366	1 131
Interest expenditure	(3 634)	(4 514)	(4 357)	(4 560)	(4 214)
Net profit for the year	2 168	2 474	3 083	3 072	2 716
Cash flow					
Cash generated by trading operations	8 305	10 229	9 555	8 809	9 631
Net interest received and interest paid	(2 159)	(2 721)	(2 766)	(2 631)	(2 848)
Cash flows from operations	6 146	7 508	6 789	6 178	6 783
Cash utilised in investment activities	(4 503)	(5 928)	(5 836)	(5 610)	(5 835)
Cash effects of financing activities	(4 285)	-637	-468	(1 907)	505
Debt raised	1 813	596	2 703	1 934	4 338
Debt repaid	(4 914)	(3 481)	(3 100)	(4 321)	(2 520)
(Increase)/decrease in long-term financial market investments	(1 184)	2 248	(71)	480	(1 313)
Net (decrease)/increase in cash and cash equivalents for the year	(2 642)	943	485	(1 339)	1 453
Ratios					
Profitability and asset management					
Return on total assets, %	7,37	9,69	11,30	11,65	11,45
Real (inflation-adjusted) return on total assets, %	0,90	2,34	3,62	3,89	3,82
Gearing					
Debt:equity	0,83	0,89	1,08	1,25	1,45
Interest cover	1,91	1,74	1,92	1,96	1,88
Value created per employee, R'000	416	381	360	330	293

Source: Eskom Annual Report 1999

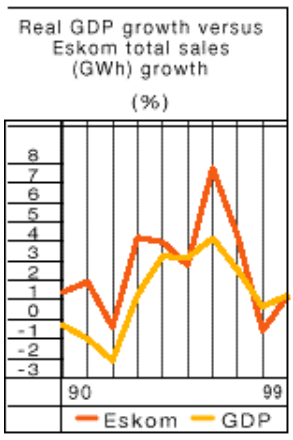
Definitions:

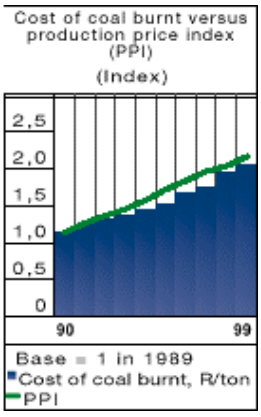
- Return on total assets – Net operating income expressed as a percentage of total assets
- Real (inflation-adjusted) return on total assets – Net inflation-adjusted operating income, after taking account of financial gearing adjustment, but before taking into account interest income and interest expenditure, as a percentage of total assets
- Debt : equity – Net financial market investments and liabilities divided by total reserves
- Interest cover – Net operating income divided by net interest income and expenditure
- Value created per employee – Value created divided by number of employees at 31 December as per value added statement
- Total assets are reduced by financial market investments and interest receivable, since Eskom's funding is managed in a single pool of financial market assets and liabilities.

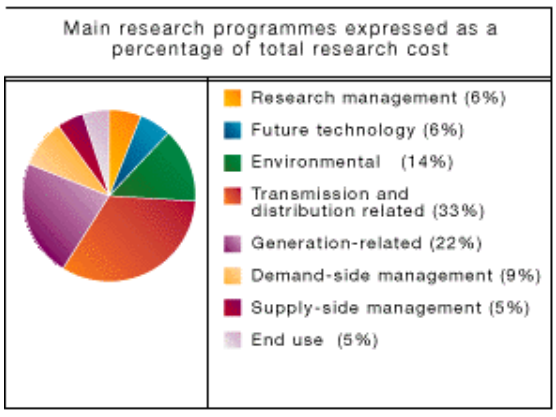
Exhibit 3

Eskom: Value Added Statement

	1999 R'm	1998 R'm	1997 R'm	1996 R'm	1995 R'm
Value created					
Revenue and manpower cost capitalised	21,840	21,479	20,814	19,038	17,445
Less: Cost of primary energy, materials, services and abnormal items	-7,695	-7,260	-6,615	-5,815	-5,720
	14,145	14,219	14,199	13,223	11,725
Value distributed					
To remunerate employees for their services	6,051	5,119	4,726	4,278	3,604
To providers of finance for monies borrowed	2,373	3,358	3,349	3,194	3,083
	8,424	8,477	8,075	7,472	6,687
Value Retained					
To maintain and develop operations	5,721	5,742	6,124	5,751	5,038
	14,145	14,219	14,199	13,223	11,725







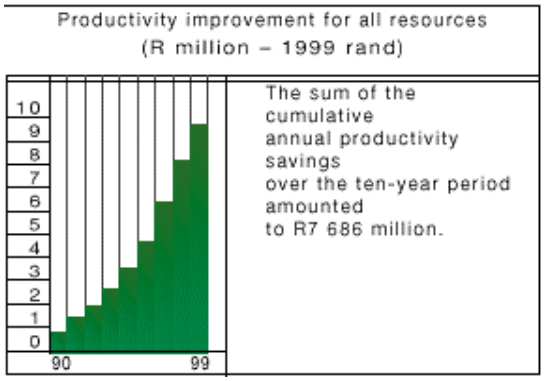
Source: Eskom Annual Reports 1996 – 1999

Exhibit 4

Eskom: Productivity Statement

	1999 R'm	1998 R'm	1997 R'm	1996 R'm	1995 R'm
Net profit for the year	2,168	2,474	3,083	3,072	2,716
(Deduct)/Add back provisions and adjustments not impacting on overall productivity performance	-260	148	128	-	-
Adjusted net profit for the year	1,908	2,622	3,211	3,072	2,716
Adjusted net profit for the previous year	2,622	3,211	3,072	2,716	2,268
Change in net profit	-714	-589	139	356	448
Attributable to:					
Productivity improvement/ deterioration before restructuring	75	-268	91	488	224
Negative productivity from restructuring	-426	-	-	-	-
Net productivity (deterioration)/improvement	-351	-268	91	488	224
Price under-recovery	-428	-419	-241	-382	-24
Growth	65	98	289	250	248
Total change in net profit	-714	-589	139	356	448

Source: Eskom Annual Reports 1996 - 1999



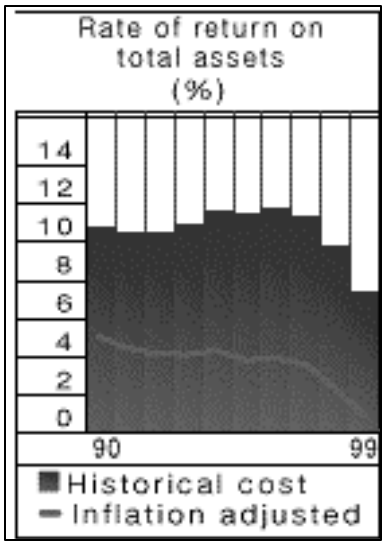


Exhibit 5

Eskom: Key Statistics

	1999	1998	1997	1996	1995
Business performance indicators					
Average price of electricity sold, cents per kWh[1]	12,44	12,29	11,85	11,30	11,15
Average total cost of electricity sold, cents per kWh[2]	11,21	10,70	10,08	9,46	9,40
Technical performance indicators					
Operations					
Total electricity sold, GWh[3]	173 422	171 454	172 550	165 370	153 547
Total available for distribution GWh	184 968	182 284	184 339	175 754	163 140
Coal burnt in power stations, Mt	88,5	87,2	90,2	85,4	79,4
Water consumed by power stations, Ml	227 306	225 300	224 754	215 199	214 329
Peak demand on integrated system, MW	27 813	27 803	28 329	27 967	25 133
Assets in commission at 31 December					
Nominal capacity, MW[4]	40 585	39 872	39 154	38 497	37 840
Net maximum capacity, MW[4]	38 517	37 848	37175	36 563	35 951
Power lines (all voltages), km	294 325	281 010	281 600	255 745	241 802
Other key statistics					
Staff employed					
at 31 December, number[5]	34 027	37 311	39 241	39 857	39 952
Customers					
at 31 December, number (thousands)	2 856	2 564	2 244	1 877	1 568

Source: Eskom Annual Reports 1996 - 1999

1. Average price of electricity sold based on total sales.
2. Average total cost of electricity sold, calculated as operating expenditure and net interest and based on external sales.
3. Includes internal sales of 309 GWh (1998: 309 GWh).
4. The difference between nominal and net maximum capacity reflects auxiliary power consumption and reduced capacity caused by age of plant and/or low coal quality.
5. Excludes employees of subsidiary companies.

Exhibit 6

Business Day - August 2000

Eskom's foray into Africa is part of bid to be global player

Robyn Chalmers

ESKOM has its sights set on becoming a player in the global power industry by expanding into South America, as well as India and China should opportunities arise, says chairman Reuel Khoza.

Khoza said this week that in the worldwide electricity supply industry, there was an unmistakable move towards consolidation.

Large energy companies, such as US group Enron and French utility EDF, were on the acquisition path and only the biggest would survive, he said.

"If Eskom is content to remain a regional player, we will disappear and you will buy your electricity from one or other huge multinational," he said.

Khoza said government's plan to unbundle and restructure Eskom to allow for competition in SA's power market within the next three to five years would not affect the expansion plans.

"It may sound contradictory ... but we believe competition will help our cause," he said.

Khoza said Eskom was well into the first phase of its expansion plan, having created subsidiary Eskom Enterprises to move into Africa.

Projects under way included a $100m agreement to supply water and electricity in Gambia and the formation of a consortium with EDF and Saur International to bid for 51% of Cameroon's Sonel. Eskom is also doing consultancy work on Zanzibar.

According to Khoza, the second phase would be to consider "exceptional opportunities" in other parts of the world, notably developing countries.

Eskom Enterprises' other ventures into Africa include the installation of 450km of fibre-optic cables between Arnot in SA and Mozambique, as well as 1 200km of cables between Abuja and Lagos in Nigeria.

One of Eskom Enterprises' key projects is the pebble bed modular reactor, a mini nuclear reactor.

Eskom Enterprises CE Jan de Beer said the introduction of a second international investor was likely to be announced next week.

De Beer said the new investor would be a "very big and successful" foreign utility which would take between 10% and 12% of the project. The introduction of the first foreign investor, British Nuclear Fuels, which is acquiring about 20% of the scheme for R100m, has been finalised.

Eskom transmission manager Peter O'Connor said the debt situation with the Zimbabwean Electricity Supply Authority (Zesa) was worsening. As a result, Eskom had cut its supply to Zimbabwe to 150 megawatts (MW) from 450MW and would consider taking equity in Zesa as one option of reducing the debt of more than R100m.

"We have told Zesa that, should our big, paying customers require this power, we will be forced to stop our supply (to Zimbabwe)," he said.

An official said Eskom had withheld power from Zesa for several hours this week. However, any cessation of power from SA is unlikely to plunge Zimbabwe into darkness because the country also has access to supplies from Mozambique, Zambia and the Democratic Republic of Congo.

Exhibit 7
Eskom: Productivity Memo

Memo

Attention: Leo Gericke: Senior General Manager, Finance
From: Hermann van Zyl: Management Accounting Manager Western Region
Cc: Wilmott Prusent: Productivity Accountant
Date: 29th October 1990

Re: **Report back on the National Conference on Productivity Accounting**

Thank you for allowing me to attend the recent National Conference on Productivity Accounting (PA). A number of interesting and thought-provoking papers were presented, some of which address the issues that are currently causing us concern. I have prepared a separate pack of these papers, which will be circulated under separate cover.

My notes on the conference follow. As requested, I have provided an overview and summary of the current thinking on PA. This, I would suggest, should guide our thinking regarding the re-alignment and future functioning of our own PA methodology.

History and Overview

What was continually emphasised was that productivity improvement and growth are the key to future competitiveness, particularly when South Africa enters the global market. Training and retraining are also crucial to improving productivity.

People who think that PA is a recent fad forget that it was first implemented in the 1950s when Hiram Davis recognised the inadequacy of reporting on net profits as the only measure of performance. It is defined as a measure over time that compares the performance this year with the performance of previous years, and shows the improvements achieved by an organisation. A significant relationship exists between sales growth, productivity, price recovery and profits. By separating growth, management can analyse changes in productivity and changes in price recovery. However, each resource must be expressed in terms of quantity and price. Then, profit is the difference between an organisation's revenue and its costs.

Improvements in productivity can be brought about in many ways, including:

1. producing the right products and services (effectiveness),
2. tighter management or,
3. a better allocation of resources.

Producing the right products should lead to an increase in demand, which will make better use of capacity – this is termed "capacity driven". Tighter management or better allocation of resources should result in a higher rate of conversion (efficiency) – this is termed "efficiency driven".

Productivity Accounting in Financial Terms

Another definition used at the conference suggests that productivity accounting refers to the means whereby changes in financial performance are explained:

1. In terms of the contributions from changes in productivity, pricing and business growth,
2. The generation of wealth through productivity, and
3. The distribution of business growth among the different stakeholders.

At least two financial periods need to be compared. A productivity statement reflects the change in profits between these periods. The productivity improvement occurs when outputs increase more than the relative inputs (or the inverse, i.e. where outputs decrease less than inputs decrease).

Traditional accounting data can be extended to include output and input quantity and price drivers, and by analysing the changes between them. It is important to measure and report on the results of productivity accounting in a holistic manner, although partial measurements are required to make up the whole measurement. This system will enable management to review the overall performance and focus on areas of the business that require specific attention. For Eskom these inputs (resources) would include sales, primary energy, manpower and assets.

Therefore, total productivity measurement requires that all resources employed, including capital, be incorporated into the calculation. The calculations must include:

1. Revenue and costs, which have to be separated into quantity and price components (through appropriate quantity and price drivers).

2. Changes in the quantity and price drivers have to be calculated– for this purpose a base and contrast period should be identified.
3. Thereafter, output (product) quantity and price changes have to be compared with the input (resource) quantity and price changes. Changes in productivity, price recovery and business growth can be calculated from these contrasts and expressed in the form of index numbers, percentages and monetary numbers.

Target Setting for Productivity Accounting

1. To implement productivity accounting, the company needs to ensure that management understands the methodology. Management's full support of the concept is also required;
2. There needs to be a base year (such as the current year). Another period can then be compared to this base year;
3. Targets must be developed in conjunction with management to make them part of the process;
4. The productivity accounting approach should be used to establish targets;
5. To set targets, the estimated resource variability (REVA) for each resource should be identified. An efficiency improvement level must be agreed upon.

Inflation

Productivity Accounting takes inflation into account and can identify, via the company's pricing policy, whether the business is inflationary or deflationary. The national inflation rate is not used; increases in actual suppliers' prices are compared to increases in the selling prices of the business. An over-recovery would indicate inflationary pricing by the company, while an under-recovery would be indicative of deflationary pricing.

10 steps to any productivity exercise:

1. Decide what system to measure. This may be the total business, part of the business, a department or a process.
2. Productivity Accounting is reliant on contrasting periods. Select a minimum of two financial periods (called base and contrast) – over which changes in productivity, price recovery and growth are to be measured. Then select the frequency of data collection. The financial information must be reconciled with the reported financial performance figures, usually profit before tax and return on investment.
3. Design a structure including the description of the products, costs, expenses and assets in enough detail to be consistent with the requirements of the analysis. Descriptions should be close to the existing chart of accounts.
4. Define and collect data including the rand values. Define and collect the appropriate price and quantity drivers for each category specified. Value = Quantity x Price.
5. Calculate the ratios. The two main identities for productivity accounting are:
   Value = Quantity x Price. Therefore the value, quantity and price ratios for each category specified must be reviewed.
   Profit = Total Revenue less Total Costs.
   And, productivity can be measured as Productivity = Output qty/ Input qty.
   Change in profits = Productivity Variance + Price Recovery Variance + Business Growth.
6. Derive the weighted changes in output and input quantities and prices.
7. Calculate performance ratios and variances in accordance with the formulas: e.g. the sum of the efficiency variance plus the capacity variance is equal to the productivity variance.
   Productivity Variance = Efficiency Variance + Capacity Variance.
   Profit Change = Profitability Variance + Business Growth.
8. Report the results internally and in the annual report.
9. Interpret changes in productivity, price recovery and growth.
10. Entrench productivity accounting through commitment.

In conclusion, considerable work is required to implement and manage productivity accounting. Although partial measures of productivity such as turnover per employee are easy to calculate, more meaningful information requires that changes in quantities and prices are measured by the organisation.