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.

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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

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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.

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[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.

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[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		