HARVARD | BUSINESS | SCHOOL

9-606-015

REV: OCTOBER 20, 2006

ANDREW F. MCAFEE

Pharmacy Service Improvement at CVS (A)

On a Thursday afternoon in July of 2002 Jon Roberts, Josh Flum, Tom Grossi, and Mitch Betses walked into a cluttered conference room at CVS headquarters in Woonsocket, Rhode Island. For several months, the room had served as the data repository, meeting space, and nerve center for the company's Pharmacy Service Initiative (PSI). Most horizontal surfaces were stacked high with folders, binders, and books, and most vertical ones were covered with whiteboards, sticky notes, sheets of paper, and hand-drawn flow charts. The four men cleared off enough space to sit down around a table.

Their eyes were drawn to two recently added pieces of paper on the nearest wall. One was a list of the problems the PSI team had uncovered during a recent series of observations at CVS pharmacies around the country (**Exhibit 1**); the other was a description of the problems encountered over the course of a single shift by the person staffing the prescription pickup counter in one pharmacy (**Exhibit 2**).

Flum looked at Betses. "You told us it was bad, but *this* bad?"

"I told you there were service issues in our pharmacies. But I have to admit, even I didn't know the whole story."

"So what do we do about it?"

"Well, we can't have 67 solutions for the 67 problems we identified," Roberts said.

"Definitely not," Grossi agreed. "But do you have an idea what we *should* do? If you erased that whiteboard and grabbed a pen, could you draw the 'right' flow chart for pharmacy operations?"

"Actually, I think I could come pretty close. And I think my flow chart would look a lot like both of yours. I'm just not sure which parts of it would be easy to implement and which would be tricky. Mitch, you know these places better than anyone—what kinds of changes would make them *really* unhappy?"

"Anything affecting safety. Everyone—not just the pharmacists—is a fanatic about making sure we fill prescriptions accurately and watch out for the health of our customers. So for example if we said, 'In the interests of efficiency we want to have the system spit out fewer alerts about drug-drug interactions,' we would get *killed.* The pharmacists would march us right out the front door of their stores and tell us never to come back. And I wouldn't blame them."

"Got it. What else?"

Professor Andrew F. McAfee prepared this case. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

"Anything that increased customer waiting times. People in the pharmacy feel like customers already wait way too long when they come to pick up prescriptions, especially at peak times. They're not in a good mood when they get to the front of the line, and it can get *really* ugly if after they've waited all that time they're told their medicine isn't ready."

Roberts nodded. "OK. Hand me that whiteboard eraser and pen. Here's the new process. It doesn't degrade safety at all, it *decreases* waiting time, and it improves customer satisfaction. Of course, convincing the pharmacies that's true might not be easy."

Pharmacy Operations at CVS

The first "Consumer Value Store" opened in Lowell, Massachusetts in 1963. The company grew quickly after that, both organically and by acquisition, and by 2002 CVS was one of America's largest retail drugstores, with over 4,000 stores and revenue of $24.2 billion, over two-thirds of which was generated by the pharmacies (see **Exhibit 3** for selected corporate financial information).[1]

The Pharmacy Service Initiative

As the company grew, managers started to worry that pharmacy operations were not performing well. Anecdotes from both customers and employees indicated that many locations had serious problems with customer service. The company's pharmacy business, however, grew as quickly as the industry average. Some interpreted this to mean that CVS did *not* in fact have serious service problems.

To understand the true state of pharmacy customer service and to make any required fixes, CVS launched the PSI and staffed it with operations executives and managers, including Roberts, the senior vice president of store operations; Flum, the director of store technology; and Betses, the director of pharmacy operations. Also on the team were a top pharmacy supervisor, a top pharmacist, and consultants from the Boston Consulting Group, including Grossi.

Interviews and Analysis

The PSI team began gathering information by analyzing historical data and interviewing current and former customers, as well as customers of other pharmacies. This work quickly confirmed that problems existed at CVS. As Flum explained:

> It was true that we were growing at market rates, but that was only because customers believed that no one provided great service. If they came to us or stuck with us, it was because they didn't think anyone else would take better care of them, not because we were so fantastic. One of our interviewees said, "I've had problems at CVS, but why would I leave? All pharmacies probably have some problems."
>
> Luckily for us, they also thought that it was really difficult to switch from one pharmacy to another. Another interviewee said, "I don't even know what's involved in transferring a prescription. Do I have to call my doctor to get a new prescription? It just seems like it would be such a hassle."

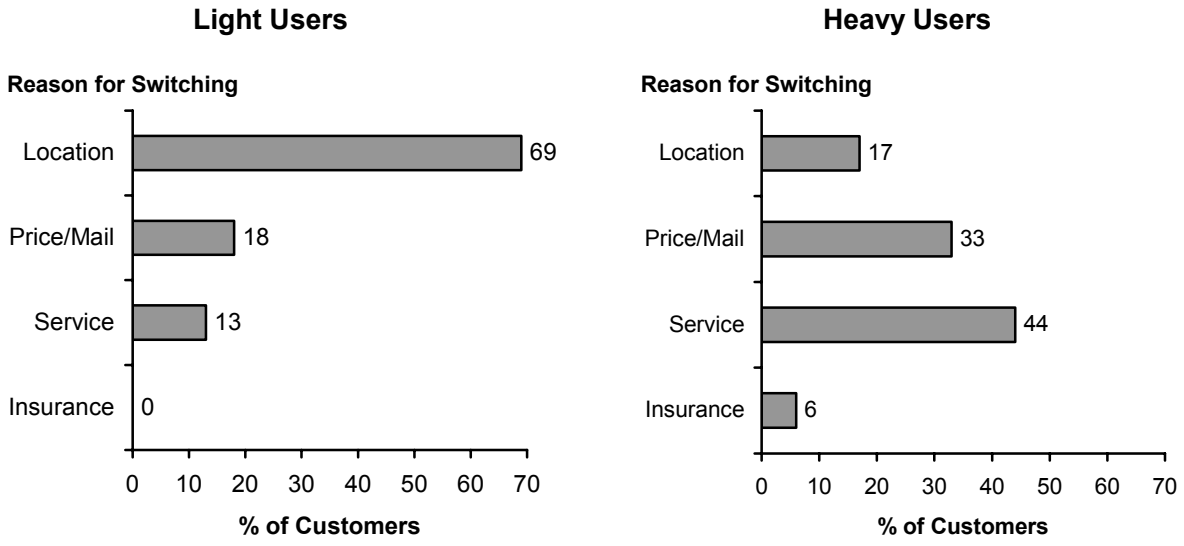
[1] Pharmacies were responsible for a roughly equivalent share of CVS profits.

Actually, it's not a hassle for the customer at all. We're required by law to immediately transfer customer records to another pharmacy whenever asked. It's a good thing for us that we weren't asked more often.

Even though customers believed that switching was difficult, deeper analyses showed that many of them took their business elsewhere each year. CVS had 29.5 million pharmacy members at the start of 2000, a year in which total revenue for the corporation year was $20 billion. PSI team analyses indicated that approximately 7.2 million regular pharmacy customers left CVS during the year.[2] The total volume of filled prescriptions *grew* during 2000 because the company also attracted 8.5 million new regular members over the course of the year, but the PSI team's work clearly highlighted that customer defections were hampering growth. The regular customers who left in 2000 took with them an estimated 55 million annual prescriptions that, had they been filled by CVS, would have contributed $2.5 billion to revenue.

Early interviews and analysis also revealed that different kinds of customers left for different reasons. The PSI team divided regular CVS pharmacy members into two categories. Light users, who filled an average of five scripts per year, were most likely to defect because of the pharmacy's location (see **Figure A**). Heavy users filled an average of 40 scripts a year and were most likely to leave because of poor service. According to Grossi, "We thought that a better fulfillment process in the pharmacies could prevent 60%–90% of the customer defections that were due to service. The PSI team had a pretty big opportunity."

Figure A Reasons Given by Former CVS Pharmacy Customers for Switching to Another Pharmacy



Source: CVS.

[2] In addition to these regular customers, an estimated 10.9 million infrequent customers left in 2000. Because infrequent customers contributed so little to total volume of prescriptions filled by CVS, the PSI team did not focus on them or include them in analyses.

Field Work

PSI team members spent time in many CVS pharmacies, systematically observing how prescriptions were filled or not filled. In addition to the comprehensive list of problems (**Exhibit 1**), they gathered other evidence that things were not working well. Approximately one in four scripts experienced a problem at some point in the fulfillment process, and 16% of all scripts had problems that were still unresolved at customer pickup. This not only slowed down pickup for other customers but also made working at the pickup station a stressful and unpleasant job. During a single eight-hour shift observed by a PSI team member, 40% of customers voiced a complaint. The tech was asked 10 questions that he was not qualified to answer and was verbally abused four times. When asked, he said that he felt he was responsible for none of the problems encountered by customers and could have done nothing to prevent them (**Exhibit 2**). As Betses explained:

> The people working at pickup are our lowest paid, least trained people, but we were asking them to do something that's both no fun and super difficult—dealing with angry customers all day. No wonder lots of them left after less than a year on the job! All of us on the PSI gained a real appreciation for how hard it was to work effectively in our pharmacies. We saw that in the few that *were* working well, people had either developed elaborate workarounds or were making heroic efforts or both.

The Pharmacy Fulfillment Process

The PSI team found that virtually all CVS pharmacies followed the same multistep process to fill prescriptions and experienced the same exceptions to it. The process consisted of five basic steps, diagrammed below in **Figure B**.

Drop-off

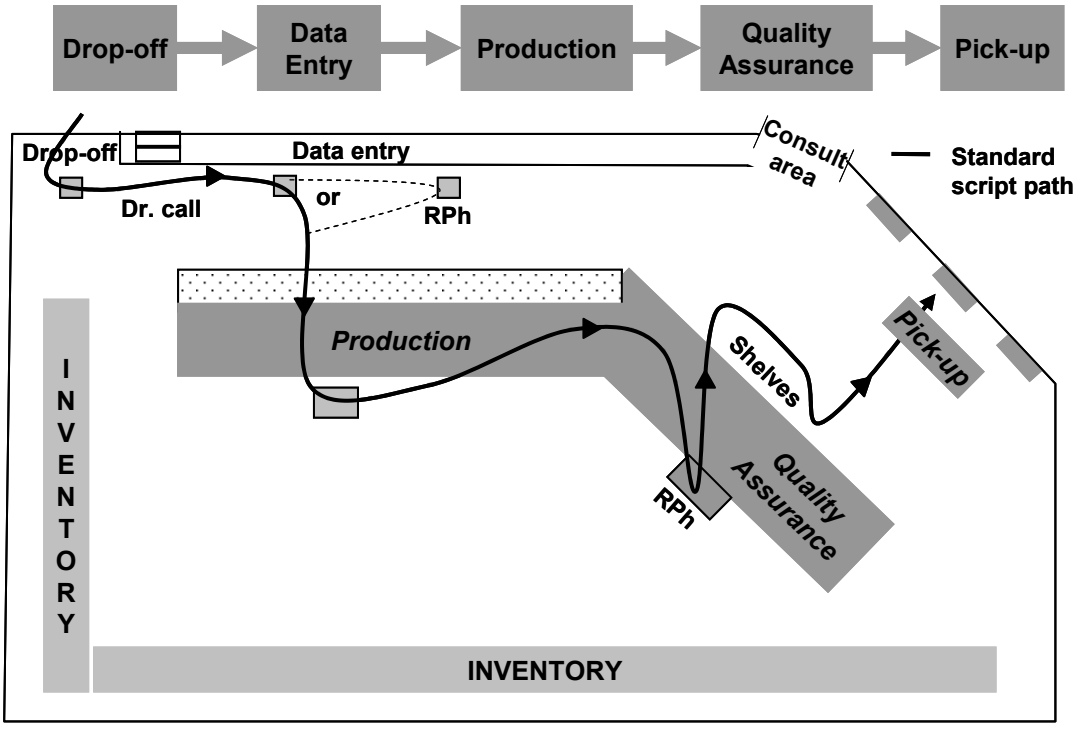
When a customer dropped off a script, a tech asked when they would return to pick it up. The tech wrote the requested pickup time on the script itself, then put it in a box that was divided into a number of slots. Each slot was assigned to a specific time period—2 p.m., 3 p.m., 4 p.m., and so on. The tech put the script into the slot corresponding to the hour *before* the desired pickup time. If the customer wanted the prescription filled immediately, the tech put the script in the slot corresponding to the current time.

Although customers dropped off their prescriptions throughout the day, the busiest times at the drop-off window were before work, lunchtime, and after work. Regardless of when they dropped them off, more customers wanted to pick up their filled prescriptions after work than at any other time.

Data Entry

Each hour, a tech took that hour's scripts from the box and entered all required data about them into the pharmacy information system, an application used by all locations and connected to CVS's central databases of drug, prescription, customer, payment, and insurance information. Required for each prescription were patient and doctor contact information, data about any third-party payors such as insurance companies or employers, and the specifics of the prescription itself: medication, dosage, number of doses, and so on.

Figure B Basic Flow for CVS Prescription Fulfillment Process



Source: CVS.

Drug utilization review As soon as data entry was complete, the system performed an automated "drug utilization review" (DUR). The DUR checked the script against all other prescriptions in the database for that patient (in other words, all prescription drugs that had ever been dispensed by CVS to the patient) to see if there existed any possibility for harmful drug-drug interactions. The DUR also checked to make sure the drug was appropriate for the patient, given the patient's age, gender, and other demographic data stored in the system.[3]

If the DUR revealed any potential problems, the systems came to a "hard stop" and fulfillment could not proceed until the DUR was reviewed by a pharmacist. In the great majority of cases the pharmacist did not need to involve the customer when reviewing the DUR. In fact, many within the industry considered it better for the customer *not* to be involved, reasoning that if the DUR gave the impression that a prescribed drug could be harmful, the customer might be less likely to take it.

Everyone at CVS felt that the DUR was an essential part of good pharmacy operations and customer service and that the automated review should be a very careful and conservative one.

Insurance check After the DUR was complete and any hard stops were reviewed, the system performed an insurance check. Most CVS pharmacy customers had their prescriptions paid for by a third party such as an employer, an insurance company, or a government agency. These customers

[3] CVS maintained a separate application that allowed customers to request refills via telephone. This system stored refill requests until 1.5 hours before the requested pickup time, then transferred them to the pharmacy system for fulfillment, beginning with the DUR.

paid only a small amount of their own money, called a "copayment," when they picked up their medicine.[4] Payors had complicated rules about the drugs they would cover and the conditions under which they would pay for them. The insurance check verified that a script followed all of these rules. As Flum explained:

> One of the biggest changes in our industry is the fact that in recent years more and more pharmacy customers have third parties that help pay for prescriptions—over 90% of our customers now. Payors have been putting in place more and more complicated formularies[5] to try to control their costs. This complicates our work a lot.
>
> Say a doctor prescribes a drug that's not on a patient's formulary, which happens all the time because doctors and patients don't usually have formularies at their fingertips. Our insurance check is the first time anyone learns that there's a problem. We would then need to work with the doctor, the patient, and the payor to switch the prescription. Payors have also tightened rules about when they'll allow a prescription to be refilled, so patients basically have to wait longer before coming in for a refill. If they don't wait long enough the payor will refuse to cover the fill. This type of insurance rejection is called "refill too soon," and we've been seeing more and more of them.

In most cases the fulfillment process would continue even if one of these rules was violated; CVS pharmacy employees would attempt to identify and correct the problem while the process continued or when the customer came to pick up their prescription.

Production

The drugs to fill the script were counted and verified by certified pharmacy technicians in the production area, which was near the shelves where medicine was stored.

Quality Assurance

After production, a pharmacist reviewed each script to make sure that it contained exactly the right drugs in the right quantities and that all other details were correct. Quality assurance (QA) was one of a pharmacist's most important tasks and was never delegated to a technician or other employee in the pharmacy.

The steps from data entry to QA could be completed in approximately five minutes if there were no problems.

Pickup

After QA, each completed script was sealed in a bag. Bags were stored in the pickup area in alphabetical order. When customers arrived to pick up their prescriptions, the technician staffing the pickup window searched for the right prescription among the bags, verified customers' identities, and took any required payments from them.

---

[4] Copayments were typically between $5 and $20, which was a small fraction of the cost of most nongeneric pharmaceuticals.

[5] A formulary is a set of rules governing the medicines a third party will pay for and the circumstances under which they will pay. A formulary might state, for example, that a third party will only pay for a generic version of a certain antibiotic and will only pay for 30 doses a month. Formularies were so complicated that many payors worked with separate companies called pharmacy benefit managers (PBMs) to define, update, and enforce them.

Problems during the Process

Pickup window technicians also dealt with customers who did not get what they were expecting. Based on their analyses and observations, the PSI team estimated that 16% of customers fell into this category. The team was even more disturbed to find that 27% of scripts encountered a substantial problem at some point in the fulfillment process.

Drop-off

The only substantial problem that arose at this step, the PSI team found, was an unmanned drop-off window. As Grossi explained, issues were not common at this stage because "nothing happened at drop-off. The customer just handed over a script and walked away while the tech filed it in the box according to pickup time."

Data Entry

When the tech took scripts from the box and entered their details into the system, a number of problems could occur.

No refill allowed Many scripts allowed the customer to refill the prescription at least once. Customers could lose track of how many refills were allowed, however, and drop off an ineligible script. When this occurred the system printed a label for the ineligible script, which was put in a "Dr. call bin." A tech would periodically take the contents of this bin and make phone calls or send faxes to doctors' offices asking for their approval to refill the prescription. If the tech reached the doctor immediately and the doctor approved the refill, the script proceeded to the next step in the process. If the doctor rejected the refill, the label was put in a "Dr. denied" box near the pickup area; customers learned about refill denials when they returned to pick up their prescriptions.

If the tech could *not* reach the doctor immediately, the label was put in a "Dr. call-back box." Problems stemming from "no refill allowed" scripts required from 20 minutes to three days to resolve, with an average resolution time of one day. "No refill allowed" scripts were 6% of total scripts.

DUR hard stop The DUR generated a hard stop for 20% of all scripts. Over 90% of hard stops were resolved by pharmacists without involving the prescribing doctor. As Betses explained:

> The system checks each script against all others for that patient dispensed over the last 12 months. So the DUR for script A could generate a hard stop because of the possibility of a drug-drug interaction with script B, which was a 10-day course of antibiotics prescribed eight months ago. Pharmacists would clear that kind of hard stop after a careful review. They would clear others after calling up the patient to determine, say, that their weight was appropriate for the dosage prescribed. In both of these cases the system is working as planned; we want hard stops every time there's even a small chance of harm, and we want the pharmacist to take action on them quickly. In a few cases, though, there is a serious potential problem with the script as written. The DUR generates a hard stop, and the pharmacist needs to call the doctor to resolve the potential problem.

Insurance check Seventeen percent of all scripts encountered a problem during the automated insurance check. The majority of these problems were easy to resolve; they were due to date-of-birth errors on the script or to a customer's having changed jobs or insurers. Some errors of this type could be resolved by the data-entry technician alone; others required a phone call to the customer. Other

insurance problems were harder to resolve and required a phone call to the insurer and/or the prescribing doctor. Scripts were filled even if insurance problems were not resolved. When this was the case, the customer was asked to pay the full amount of the prescription at pickup.

Production and Quality Assurance

The only problem identified at the production step was insufficient inventory to completely fill the script. Seven percent of scripts encountered partial or complete stock shortages of the required medicine.

The PSI team did not find any issues with quality assurance as practiced at CVS. Pharmacists diligently and completely reviewed each filled script and made sure that the drugs dispensed were actually the ones prescribed.

Pickup

Team members documented a variety of issues at the pickup window. The most common were unpleasant customer surprises: unauthorized refills, scripts that had not been paid for by insurance, or scripts that were simply not ready yet. Some of these issues prevented fulfillment, causing customers to walk away from the pickup window without medicine and with a bad impression of CVS customer service. Even when problems could be fixed, the resolution process took a long time and increased wait time for other customers in line. The situation at the pickup window was worst between 5 p.m. and 7 p.m., when customers came after work to pick up the prescriptions they had dropped off or called in earlier. Most CVS locations found it difficult to staff this time period simply because pharmacy employees did not want to work then. As one tech said to the PSI team, "I hate the late afternoon shift. You spend all your time dealing with angry people, and you can't do anything to make things better for them."

Flum commented: "Pickup is where customers wait in line, get bad news, get mad, and yell at the poor tech, but that doesn't mean that we need to fix pickup. It means that we need to fix whatever's causing pickup *not* to have the completed script with the right copayment amount ready when the customer walks up to the counter."

Conclusion

The PSI team felt that they had a great deal of freedom to change pharmacy fulfillment operations. Their work was sponsored and supported by senior management, and CEO Tom Ryan had stated that pharmacy service improvement was the most important corporate initiative for the coming year. Team members therefore knew that their recommended changes to tasks, responsibilities, and processes would carry much weight. They also knew that they could get information systems changed, if necessary; pharmacy IT at CVS was part of the operations function, which had sponsored the PSI.

Team members also realized, however, that any changes they made could not compromise customer safety. Even changes that *appeared* to do so would be difficult to sell to the organization.

As Roberts started to sketch a new fulfillment process on the whiteboad, Flum, Betses, and Grossi wondered exactly what it would look like and how it would be accepted by CVS and its pharmacies.

Exhibit 1 CVS Pharmacy Fulfillment Problems Noticed by PSI Team

Drop-off

- Nobody watching in-store drop-off window
- Extended wait before initial greeting in store
- Nobody responds to drive-thru
- Tech must choose between serving customer in store or serving drive-thru
- Drive-thru closed
- Long wait behind someone at drive-thru
- Customer calling in refill left on hold
- Provider left on hold
- Provider voicemail not regularly checked
- Fax machine not regularly checked
- Customer cannot locate drop-off
- Initial interview fails to obtain critical data
- Failure to properly prioritize scripts
- Wait times made up/over-promised
- OOS not checked
- Customer cannot verify demographics
- Script misfiled in time slot organizer
- Customer with no refills not informed process may take up to three days
- Incomplete information taken from provider
  - Customer later cannot be found in system
- Provider calls/faxes not prioritized as P2

Data Entry

- DURs arise frequently and RPh must intervene
- No clear protocol for resolving third-party problems
- Resolvable third-party issues filled for cash
- Steps taken to resolve third-party issues not recorded with script
- 90-minute lead time on IVR does not provide adequate time to resolve third-party issues
- Customer not notified of third-party issues
- In-store process for handling refill authorizations not optimized
- No standard form for faxing providers
- Faxes/calls to providers not done in timely manner
  - Left in doctor call box
- "MD will call back" box not reviewed regularly
- Patient not notified of need for refill authorization
- IVR holds scripts that need refill authorization in "D" queue
- IVR "D" queue not routinely checked
- IVR informs patient that script without refill authorization can be ready after five hours
- Person at DE cannot read provider handwriting
- Person at DE cannot read tech handwriting
- Prescribed medication no longer manufactured/incorrect dosage

Production

- Group of scripts arrives separately
- Tech cannot determine whether IVR scripts are part of group
- Failure to properly prioritize label print
- OOS issue first determined
- Customer not called about OOS/partial
- OOS not ordered from OV
- Baskets delivered to QA out of priority

QA

- Rx filled incorrectly
- Pill image not in system
- Hard copy image not in system/illegible
- RPh busy at other stations, falls behind at QA
- RPh fails to announce P4 and P3 scripts

Waiting Bins

- Completed order misfiled
- Script groups not maintained
- Green zones not cleaned regularly

Pickup

- Tech/PSA cannot find script
- Tech/PSA finds part of group of scripts
- Tech/PSA does not follow any process to find script
- Tech cannot adequately explain insurance issue
- Tech not sure if doctor called about refill
- Rude staff
- RPh makes no effort to help resolve problems
- Long lines at pickup
- No additional registers opened to ease traffic
- Nobody responds to drive-thru
- No cash register at drive-thru
- Tech/PSA forced to choose between line at pickup and drive-thru
- Drive-thru closed
- Long wait behind someone at drive-thru

OOS:	Out of stock
DUR:	Drug utilization review
RPh:	Pharmacist
IVR:	Integrated voice response (automated system allowing customers to phone in refills)
MD:	Physician
DE:	Data entry
Rx:	Prescription
PSA:	Pharmacy service associate

Source: CVS.

Exhibit 2 Issues Faced by Technician Staffing CVS Prescription Pickup Window, as Noticed by PSI Team Members

Some things techs hear in a typical day

"Why the hell is this four hundred dollars? I always pay fifteen for any drugs!"

"I'm not moving from this spot until we get this cleared up. I am NOT paying that much! This must be a joke!"

"You lost my prescription! I'm tired of this all the time! Why can't you ever do anything right?"

"Where are my other scripts?"

"I'm not sure how many scripts I have."

"What do you mean you can't find my order, I called it in yesterday."

"I talked to someone four days ago to make sure my order would be ready, and you're telling me it's not done?!"

In one eight-hour shift at the register

80—Total number of customers dealt with

32—Total customers with problems

- 21—Customers who waited longer than they thought they should have
- 16—Customers with orders not ready/complete[a]
- 9—Customers paying more than expected[b]
- 4—Customers complaining about front store-related issues (i.e., coupons, sales, stock)

10—Number of times tech was asked a question they were not qualified to answer

4—Number of times tech was verbally abused by the customer

0—Number of problems tech feels they were responsible for

Source: CVS.

[a]Includes out-of-stock, partial fills where customer is not previously contacted, refill authorization required, third party.

[b]Includes third-party rejects filled for cash and customer misunderstandings over policy coverage.

Exhibit 3 CVS Historical Financials (millions of dollars)

Year	2002	2001	2000	1999	1998
Net Operating Revenues	24181.5	22241.4	20087.5	18098.3	15273.6
Cost of Goods Sold	18112.7	16544.7	14725.8	13236.9	11134.4
Gross Margin	6068.8	5696.7	5361.7	4861.4	4139.2
Operating Expenses & D, D. & A	4862.6	4577.1	4058.2	3725.9	3198.7
Operating Profits	1206.2	1119.6	1303.5	1135.5	940.5
Non-Operating Expenses	50.4	-288.0	98.5	59.1	-127.7
Pre-Tax Income	1155.8	1407.6	1205.0	1076.4	1068.2
Income Tax	439.2	296.4	497.4	441.3	306.5
Minority Interest	0.0	0.0	0.0	0.0	0.0
Net Income	716.6	413.2	746.0	635.1	384.5
Net Margin	**2.96%**	**1.86%**	**3.71%**	**3.51%**	**2.52%**
Inventories	4013.9	3918.6	3557.6	3445.5	3190.2
Accounts Receivable	1019.3	966.2	824.5	699.3	650.3
Cash and Cash Equivalents	700.4	236.3	337.3	230	180.8
Other Current Assets	248.5	333	217.2	233.2	327.9
Total Current Assets	5982.1	5454.1	4936.6	4608.0	4349.2
Property, Plan and Equipment	2215.8	1847.3	1742.1	1601	1351.2
Other Non Current Assets	1447.4	1326.8	1270.8	1066.4	985.8
Total Assets	9645.3	8628.2	7949.5	7275.4	6686.2
Asset Turnover	**2.51**	**2.58**	**2.53**	**2.49**	**2.28**
ROA	**7.43%**	**4.79%**	**9.38%**	**8.73%**	**5.75%**
Accounts Payable	1707.9	1535.8	1351.5	1454.2	1286.3
Other Current Liabilities	1398.0	1530.1	1612.6	1435.7	1847.0
Total Current Liabilities	3105.9	3065.9	2964.1	2889.9	3133.3
Non Current Liabilities	1342.4	995.4	680.8	705.8	442.3
Total Liabilities	4448.3	4061.3	3644.9	3595.7	3575.6
Equity	5197.0	4566.9	4304.6	3679.7	3110.6
Total Liabilities & Equities	9645.3	8628.2	7949.5	7275.4	6686.2
Levarage (Equity/Total Assets)	**0.54**	**0.53**	**0.54**	**0.51**	**0.47**
ROE	**13.79%**	**9.05%**	**17.33%**	**17.26%**	**12.36%**

Source: Standard & Poor's Research Insight.

Note: Fiscal Year ends December 31.