Case Study

Decisions at the touch of a button

Coca-Cola Japan puts the fizz back in vending machine sales

by Karen D. Schwartz

It's 3 p.m. on a typical workday in Japan—the perfect time for an afternoon break. You walk down the hall to a large vending machine standing ready to dispense a variety of hot and cold beverages. You make a selection from nearly 30 available products, and soon you're back to work, beverage in hand. You never stop to think that the machine stocks your favorite beverage, dispenses your selection—the newest health drink—without fail and gives you the correct change automatically. That's just to be expected, right?

Behind that level of simplicity is a lot of hard work and careful planning by Japanese bottling companies, who have to decide which drinks will sell best in their machines while at the same time eliminating out-of-stocks and reducing equipment failures.

Haruhiku Inagaki, president and CEO of the Hokuriku Coca-Cola Bottling Company (left), and Takehiko Ikeda, Business Intelligent Solutions.

Adding to those pressures is the fact that Japanese consumers are demanding newer, fresher and healthier drink choices, forcing companies to promote and distribute new products while creating shorter life cycles for existing products.

Such challenges have meant a decline in sales for a market that traditionally is highly profitable for bottlers. After all, the convenience of buying a single, chilled bottle of your favorite beverage instead of an entire case comes at a premium price. At the same time, however, supermarkets and convenience stores in Japan offer greater selection and availability than vending machines can ever hope to offer, making these outlets attractive alternatives for finicky consumers.

So how does a successful bottling company ensure that its vending machines continue to turn a profit in the highly competitive soft drink industry? The answer for Hokuriku Coca-Cola Bottling Company (HCCBC) is Teradata.

History of change
In 1998, Mikuni Coca-Cola Bottling Company, one of 15 Coca-Cola bottlers in Japan, was the first to use a Teradata Warehouse to leverage the information each of its vending machines was already capable of gathering—unit sales, sellouts and mechanical failures. Before Mikuni implemented Teradata, no bottler had used this information, which was uploaded to a salesperson's handheld terminal when he or she visited the location.

The information was taken back to a host computer at the end of the day, except for when settlements and sales reporting were required.

Mikuni used the data to find under-performing routes. With the new system in place, the

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Japanese soft-drink market

SUPPLIERS
More than 10 major suppliers

MARKET SIZE
1.6 billion cases per year

VENDING MACHINES 2.4 million

NUMBER OF VENDING MACHINES CURRENTLY ON A WIRELESS NETWORK 20,000

PERCENTAGE OF SALES ATTRIBUTED TO VENDING MACHINES 40%

TOTAL ANNUAL SALES OF SOFT DRINKS US$42.1 billion

vending machines showed great improvements in the volume of sales per machine. Because of that success, the Coca-Cola West Japan Company (CCWJ), the sole anchor bottler in Japan, adopted the same Teradata system.

It expanded upon this system using the key business indicator concept to measure the operational performance of vending machines, including such factors as out-of-stock rate, replenishment rate, rate of actual planned visits and the rate of unplanned visits.

Against these indicators, Teradata analyzes the data and reports to the headquarters staff and area managers about the performance of the vending machines along a specific route or in a certain area.

The main objective of the Mikuni and CCWJ systems was to grow sales with the least amount of operational costs, thus raising sales and performance levels.

HCCBC realized the potential of this new approach to data analysis and decided to copy the Teradata system. However, the company knew it could further develop the system and use the data more effectively by leveraging fresh point-of-sale data from the machines and a "Column Management System," a planning tool for column assortments.

"We had to find a way to learn a great deal about our customers' preferences, including their lifestyles, values and reasons for selection," says Haruhiku Inagaki, HCCBC's president and CEO. Customer preferences differ greatly, he says, depending on occupation, gender or even time of day.

Inagaki believed the company needed to view every vending machine as a "store" optimized for the needs of the consumers it serves. To accomplish this, the company had to transform customer information into intelligence, enabling the bottler to have the right products in each vending machine at the right time to meet customer preferences.

Under HCCBC's proposed Teradata Warehouse, data would be thoroughly analyzed in an effort to improve sales and operational efficiency. As envisioned, the solution would collect not only historical data but also near real-time data that could then be transmitted via wireless connection to headquarters. Currently, data is collected once a day and delivered to the headquarters via wireless connection. Machine failures and out-of-stocks are reported to the headquarters in real time from mobile phones hooked to the vending machines.

The initial phase of the project was rolled out in 2001. It armed front-line managers—those responsible for specific vending machines—with a better understanding of the customers in their specific market, thus enabling them to serve those customers more effectively.

Making a selection
On the technical side, the first step in the project was to determine whether the company's existing databases were up to the task.

HCCBC had been using a combination of an Oracle database and various business intelligence software tools to run its sales information analysis systems.

But as the company's forward-thinking vision took shape, it became clear that the existing combination of technology simply would not meet HCCBC's needs.

"(Our previous solution) didn't have sufficient capability to analyze extensive data," Atsumasa Shimizu, HCCBC CIO notes, "and as we began considering the option of adding a wireless component to the mix, we saw some real limitations."

HCCBC executives selected a Teradata Warehouse running Teradata Database V2R5 on a 4900 NCR Server with Unix SVR4. The system, based at the company's main data center in the city of Takaoka, has enough power to meet the company's current needs and is fully scalable to satisfy its future needs.

The Teradata solution, combined with HCCBC's existing Column Management System, will help managers understand which products have sold well, enabling them to quickly adjust the product mix to avoid out-of-stocks and respond to market trends.

That's a significant change from the previous system, where each salesperson performed his or her own column (product assortment) analysis. By marrying the two, managers can use

Total Coca-Cola Japan Bottling Group

NUMBERS OF BOTTLERS IN THE COCA-COLA JAPAN GROUP 15

MARKET SHARE IN JAPANESE SOFT-DRINK INDUSTRY 31.5%

ANNUAL SALES IN CASES 510 million

TOTAL NUMBER OF VENDING MACHINES 1 million

NUMBER OF MACHINES CURRENTLY ON A WIRELESS NETWORK 20,000

PERCENTAGE OF SALES ATTRIBUTED TO VENDING MACHINES 40-50%

TOTAL ANNUAL SALES US$13.3 billion

EMPLOYEES 16,200

FACTORIES 50

BRANCHES 500

DISTRIBUTION CENTERS 40

DEALERS 1 million

the data to achieve optimum stock assortment for each individual vending machine.

"Now, we can look directly into the vending machine as it is set up or stocked and see how space is being utilized, and we can show how to change columns to eliminate out-of-stocks and increase sales of other products," Inagaki explains. "We can even show what will happen when you replace a product or swap out products. No matter what data we collect, the program can analyze the results, which will help tell us what works best in a given situation."

The technique uses an iterative process of developing assumptions for optimizing individual stores, column assortment and space allocation, and verifying the effectiveness of inventory changes. As the speed of the process increases, the system will permit constant updating of vending machine status to respond to consumer changes and maintain product freshness.

It will also allow managers to react more quickly to a variety of potential problems. The new approach provides detailed product information, such as time and date of each sale, when a product sells out, whether someone was short-changed or whether some part of the machine is malfunctioning.

In any of these cases, an alert is triggered and the machine immediately sends a report to the data center via wireless transmission. The overarching goal is more effective knowledge sharing.

Takehiko Ikeda, the former CIO of the Coca-Cola Japan Company and current BI consultant to HCCBC, says, "We wanted to use data warehousing as a tool to transform the company into a 'knowledge creation company' by enabling effective sharing of knowledge or intelligence to operate the vending business."

Enjoying the results
In 2002, HCCBC conducted a program to test its new Column Management System. HCCBC placed all of its vending machines in Nagano, Japan, on a wireless network. The company gathered near real-time POS data collected from each machine.

The results were staggering. Not only did sales increase 10% overall, but overtime and other associated costs decreased 46%. Additionally, the number of vending machines that could be served per sales-person increased by as much as 42%.

Other benefits—many of them overall goals for company growth—have included fresher products, better customer service, increased brand awareness and higher margins due to a greater product turnover and increased sales.

The pilot test was so successful that a company-wide deployment is now planned, with the active data warehouse component and expanded online vending capabilities beyond the Nagano region. Currently, about 3,500 of the company's 60,000 vending machines are networked and using the column management solution; eventually, Inagaki would like to see all of HCCBC's vending machines operate online. In total, the Coca-Cola Bottlers network in Japan includes more than 1 million machines, and Inagaki is hopeful that they, too, will someday be networked.

Inagaki envisions that the point-of-sale data from as many of Japan's Coca-Cola vending machines as possible be used not only to support the sales staff, but also to link to a country-wide supply chain management project now being undertaken. "That's what's necessary to maintain competitive advantage and customer satisfaction —something every company needs to sustain future growth." T

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PHOTO BY ALEX HAYDEN

Hokuriku Coca-Cola Bottling Company

RANKING AMONG COCA-COLA JAPAN BOTTLERS No. 1 in terms of sales growth in 2003, up from No. 2 in 2002

ANNUAL SALES IN CASES 30 million

TOTAL NUMBER OF VENDING MACHINES 66,000

NUMBER OF VENDING MACHINES CURRENTLY ON THE WIRELESS NETWORK 3,500

PERCENTAGE OF SALES ATTRIBUTED TO VENDING MACHINES 40%

TOTAL ANNUAL SALES US$545 billion

EMPLOYEES 1,500

FACTORIES 2

BRANCHES 40

DISTRIBUTION CENTERS 6

TERADATA
Raising Intelligence