

The order was electronically transmitted to the relevant warehouse where it would be filled. The software system devised an optimal picking plan, and the totes were automatically marked with a barcode, tying them to a specific order. The totes were color-coded to identity the type of products that were in them. The software determined how many totes were needed. Webvan stored data on many characteristics of each item. For example, it needed item size to determine if that item would fit into the tote, whereas weight was needed to be certain the tote would not become too heavy for the staff to lift. Some items could not be split, such as watermelons. "Crushability" was necessary to track that fragile items, such as eggs, would be on top of the totes, and heavy items, such as big cans would be on the bottom. Totes for frozen items were styrofoam-lined and contained dry-ice packs. Shelf items were collected in sequence according to the picking plan, and then the tote was conveyed to the carousel station where the picker checked the products from a list and loaded the remaining items (often working on more than one order at a time). When a tote was completed, the picker closed it and placed it on a conveyor that moved it to shipping. The system even calculated the amount of picking time required for each part of the order. Based on the scheduled delivery time and workload, it determined when to start loading each tote to arrive at shipping at the proper time. The totes were then rolled onto a truck designated for the specific transfer station where they were placed on delivery trucks and delivered according to a route prepared by route optimization software. This complex system was unprecedented.

Delivery was technically complex as well. Webvan's software optimized delivery schedules so that deliveries could be made every 10 to 30 minutes. Webvan used sophisticated route-planning software to map out the most efficient delivery route for each order. The driver's location was monitored by dispatch using the Global Positioning System (GPS) in each van. When an unplanned delay occurred, dispatchers called to inform customers who could choose either to accept a late delivery or to reschedule it. The drivers also used the GPS to plot alternate routes to circumvent traffic problems, thereby more easily meeting their schedules. At the home, the driver carried the totes inside and unpacked them. Alternatively, the customer could have the totes left unpacked for a small deposit per tote. The driver then used a handheld wireless device to print out a receipt and an itemized order list. The device also notified dispatch that the delivery was completed.

Webvan also developed a system of ordering products from its suppliers. Webvan determined what to order based on both actual and expected demand. If an item was not in the warehouse at the time a customer ordered it, Webvan used a rapid and reliable communication Web site (harbinger.net) to automatically inform suppliers. Harbinger software formatted orders for all suppliers and forwarded the orders to them. When goods arrived at a warehouse, receiving opened the cartons and scanned the products. Shelf items were put into trays, and the system used a very complex "round-robin" algorithm to assign each tray to a specific carousel. However, like many of its supermarket rivals, Webvan did little else to automate its supply chain because it was too small to force its suppliers to invest in supply chain technology.

Webvan took its first orders on June 2, 1999, in the San Francisco Bay area, and by the end of June it had nearly \$400,000 in sales. On July 8, the company signed a blockbuster \$1 billion deal with Bechtel to design and construct 26 distribution centers within the next two years, reflecting both the large amount of capital Webvan had raised and its plan for rapid expansion. In October, George Shaheen, the former CEO of Andersen Consulting (now Accenture), became the CEO of Webvan. The company was flying high, even though it had no profit and was spending investor capital rapidly, much of it devoted to building warehouses.