CASE STUDY: How Much Can New Information Systems Help GM?

General Motors (GM) is the world's largest automaker, with 386,000 employees in 50 countries. GM vehicle brands include Chevrolet, Pontiac, Buick, Cadillac, Hummer, Saturn, and GMC Trucks. GM also has stakes in Saab, Opel, Vauxhall, Subaru, and Fiat Auto. Its nonvehicle ventures include Allison Transmission (manufacturer of medium and heavy-duty transmissions), GM Locomotives, and a 35 percent share of Hughes Electronics (producer of satellites and communications).

GM's subsidiary, GM Acceptance Corp. (GMAC), is a major financing organization that specializes in financing GM vehicle purchases and home mortgages. GM's auto sales have declined, from about 60 percent of the U.S. vehicle market in the 1970s to only 28.3 percent today. The company has been facing stiff competition from Ford, DaimlerChrysler, and the Japanese, all of which have lower production costs than GM—and reputations for cars with better styling and quality.

GM's sheer size has proved to be one of its greatest burdens. For 70 years, GM operated according to the philosophy of CEO Alfred Sloan, who rescued the firm from bankruptcy in the 1920s. Sloan divided the firm into five separate operating groups and divisions (Chevrolet, Pontiac, Oldsmobile—which is being phased out—Buick, and Cadillac). Each division functioned as a semi-autonomous company with its own market- ing operations. GM remained a far-flung, vertically integrated corporation that at one time manufactured up to 70 percent of its own parts. This model of top-down control and decentralized execution had once been a powerful source of competitive advantage, enabling GM to build cars at lower cost than its rivals. Over time, however, this policy worked against the company. Domestic competitors, such as DaimlerChrysler, were able to make vehicles at lower costs because they could purchase their parts from outside vendors and bargain on pricing. GM was not able to move quickly to update its selection and styling, and the quality of its cars lagged behind Japanese and even U.S. rivals. It took GM more time and money than competitors to produce a car because the firm was saddled with a lumbering bureaucracy, inefficient production processes, and thousands of outdated "legacy" information systems that could not communicate with each other.

GM has spent the past 15 years trying to overcome this legacy. The company has struggled to become leaner and more efficient by shedding tens of thousands of workers, closing dozens of plants, and squeezing parts costs by scouring the globe for the lowest prices. Since the early 1980s, it has been working on consolidating and integrating its myriad information systems, and this effort accelerated under the leadership of CEO Ralph Szygenda.

In February 2000, 47-year-old Rick Wagoner was appointed CEO of GM, replacing Jack Smith. Wagoner set the bar even higher for information systems. He and his management team believed that by intensively weaving Internet technology into all of its business processes, GM could become a smarter, leaner, faster company, more in tune with customers. GM could use Internet and other leading-edge information systems technology to reconstruct its entire value chain, transforming itself into a customer-focused business that provides many different electronic services to consumers, as well as cars.

SELLING CARS ONLINE
GM has been experimenting with ways to sell vehicles online, although mostly with opposition from its dealers. The dealers are concerned about GM trying to bypass them by selling vehicles online. GM does not actually sell vehicles directly online but provides Web sites with a range of services for both customers and dealers. GMBuyPower.com, established in March 1999, is a Web site where visitors can browse for GM cars; search by color, options, and availability; and find a dealer in their area that stocks the car they want. The site indicates the cars those dealers have in inventory. Dealers involved in the BuyPower selling program are trained to work with customers who have done online car-buying research, and the dealers must surf every auto Web site that the customers could potentially have visited before landing at GM. GMBuyPower has generated thousands of leads to dealers per day, and more than 20 percent of these leads convert into auto purchases.

BUILDING VEHICLES TO ORDER
GM is also trying to reduce the costs of inventory and sales incentives by finding ways to make cars that customers have actually ordered. Build to order would greatly reduce finished vehicle inventory costs as well as generate other production cost savings, potentially saving GM $20 billion per year. Achieving this goal will require heavy reliance on information systems integration and extensive organizational change. The company would have to be able to take orders online, link its factories and suppliers online, change vehicle designs so they can be built more easily using modules, and greatly cut shipping times. Build to order requires producers to carry larger work-in-process inventories, a reversal of the 20-year trend of just-in-time component supply deliveries. GM has made strides in using the Internet and systems from vendors, such as I2, Oracle, and SeeBeyond, to increase efficiency in supply chain management and product delivery. Order fulfillment lead time has been cut in half, inventory costs have dropped 20 percent, and delivery date reliability has increased by 22 percent. However, true "build to order" is still in the future.

ONLINE SERVICES
GM has tried to develop steady revenue streams from technology-based services. The company established a subsidiary called OnStar that provides a telematics system with onboard navigation, Internet, safety, and communications capabilities accessed through three buttons on vehicle dashboards. A global positioning system (GPS) keeps the system constantly informed as to the location of the vehicle on the road. OnStar provides such services as emergency roadside assistance, stolen-vehicle tracking, and concierge support such as...
making dinner reservations. Whether the hardware is standard or an option, users of OnStar pay annual subscription fees ranging from $17 to $70 per month, depending on the services taken. OnStar transforms GM cars into platforms that generate continuous streams of high-margin revenues from drivers downloading and paying by the minute for Internet, data, and telecommunications services. OnStar has not turned into a profitable cash cow. Customers are balking at the monthly subscription fees, and nearly half of OnStar subscribers do not renew their service after the first year.

PRODUCT DEVELOPMENT

According to Kevin Prouty, an AMR Research analyst, "Product development is probably the most critical IT strategy that automakers are pursuing right now." GM has high hopes in this area. Until the mid-1990s every GM business unit did product development differently and used different information systems. Studios for each division worked on car designs that would get passed on to marketing, which would try to tailor the designs to consumers. Engineering would try to figure out how to build the proposed new model, and then the work was sent to manufacturing. Separate teams worked with supplier factories and parts suppliers with little interaction. There were 4 different major design software packages and more than 560 different engineering and simulation applications across the company.

GM has now mandated a single process and set of information systems tools for product development that must be used company-wide. Under Robert A. Lutz, GM's head of product development, a single committee now handles the entire product development process. GM's engineering staff has been reorganized into a single global team. Starting in 1995, GM began replacing all of its disparate engineering and design tools with a single core design and manufacturing system, EDS's Unigraphics. Every GM engineer and key GM subsystem supplier working collaboratively with GM's engineers must use this system. They can access this system from a Web-based interface to share three-dimensional designs and keep track of parts and subassemblies. The system automatically updates the design data when changes are finalized so everyone can coordinate their work on the same design. GM's standardized tools and streamlined product development process have enabled it to cut the time required to develop and produce a car from 48 months to only 18 months and to slash $1 billion in annual engineering costs. GM's new product development process also helps it compete not only on price but also on the merit of new models and new designs.

GM is now considered the most productive U.S. automaker, having cut the time to assemble a vehicle from an average of 32 hours in 1998 to 24.4 hours in 2003. GM's variable costs—labor, parts, and outsourced production—amount to 62 percent, compared to 68 percent at Ford (and 60 percent at Toyota and Honda.) GM now averages a profit of $701 per vehicle, up 108 percent from 2001. Industry analysts now rank GM vehicles next to Toyota and Honda in quality.

Despite all of these triumphs, GM still faces serious hurdles. Thirty years of management blunders have left Rick Wagoner and his management team with immense burdens and little room to maneuver. GM remains burdened with very high fixed costs for pension and health-care benefits. In better days, GM had agreed to lavish health and retirement benefits for its workers as a way to buy peace with the United Auto Workers (UAW) union. As mounting losses forced GM to cut its workforce, the company resorted to early retirement offers, adding thousands of retirees to collect pensions. Although GM pays its unionized UAW workers only slightly more per hour than Toyota, Honda, and Nissan pay their U.S. factory workers, GM's pension and health-care costs are huge—about $24 per hour at GM compared to $12 at foreign factories. GM's pension fund was decimated by the stock market decline in the 1990s and early 2000s, and the company may need to generate more than $15 billion over the next 5 years to rebuild the value of that fund. In addition, GM will have to pay an additional $5 billion per year to provide health-care to current and former workers. In a business with very slim profit margins, such costs can be decisive.

Faced with similar problems, a company such as Ford would have closed more plants and accepted a smaller portion of the U.S. market. This is a strategy that GM cannot afford because then the company would produce and sell fewer vehicles, meaning less income for those big pension and health-care costs. As Wagoner observes, "We have a huge fixed-cost base. It's 30 years of downsizing and 30 years of increased health-care costs." By 2008 some of those legacy costs will diminish as the ranks of GM's elderly retirees thin. GM has to hold out until then, keeping up cash flow to cover those costs until they shrink. At the same time the company has to continue making improvements in quality, efficiency, design, and brand appeal.

Despite shedding tens of thousands of workers, chopping billions of dollars per year, GM's "G.M. to Raise $10 Billion Models, GM's profit margins are still too low. GM still suffers from a weak brand image, with many car buyers perceiving the Chevrolet, Pontiac, and Buick brands as musty and second rate. Many consumers continue to choose Toyota or Honda, and a rejuvenated Nissan and improving Hyundai are adding new pressures. As fast as GM can get new models to market, its Japanese competitors are still faster. Honda's new vehicle development cycle is only 14 months, and the company is trying to compress development time down to 12 months. GM may now have the greatest set of information systems and technology services in the auto industry, but how much can they help?

Sources: David Welch with Kathleen Kerwin, "Rick Wagoner's Game Plan," Business Week, February 10, 2003; Ralph Szmydzi, "It's a Great Time to Be in I.T.," Information Week, January 27, 2003; Danny Hakim with Jonathan Fuerbringer, "G.M. to Raise $10 Billion Models, GM's profit margins are still too low. GM still suffers from a weak brand image, with many car buyers perceiving the Chevrolet, Pontiac, and Buick brands as musty and second rate. Many consumers continue to choose Toyota or Honda, and a rejuvenated Nissan and improving Hyundai are adding new pressures. As fast as GM can get new models to market, its Japanese competitors are still faster. Honda's new vehicle development cycle is only 14 months, and the company is trying to compress development time down to 12 months. GM may now have the greatest set of information systems and technology services in the auto industry, but how much can they help?"