

- 一、何謂非同步傳輸模式(Asynchronous Transfer Mode, ATM)? 為何大家會這麼注重 ATM? (10%)
- 二、請簡要說明下列各名詞的意義和彼此間的關係。(20%)
1. Browser
 2. Web Server
 3. HTML
 4. HTTP (Hyper Text Transfer Protocol)
 5. CGI
- 三、何謂防火牆(Firewall)?除了架設防火牆之外，一個電子商務網站還須提供哪些安全功能?請儘可能具體詳細地分項說明這些技術。(20%)
- 四、與一般程式語言比較，物件導向程式語言有那些不同的功能機制，能達成何種作用，而有助於軟體危機的解決?(20%)
- 五、在一個資訊系統發展的過程裏，下列各項工具，分別用在何種工作的進行：
(1) Structure chart (2) Coupling (3) Flow chart (4) Decision tree (5) E-R model (15%)
- 六、要讓一個未正歸化的關係 (relation) 行成一些正歸化的關係，可能要進行那些工作，請全部列出說明。(15%)

1. 請仔細閱讀附件的個案：Goodyear automates its sales force。
2. 回答個案描述之後的六個問題。
3. 注意：答題時，請橫式書寫(可用中文回答)。

Case Study

GOODYEAR AUTOMATES ITS SALES FORCE



Goodyear Tire & Rubber Co., of Akron, Ohio, manufactures tires and rubber products for automobiles, trucks, and heavy equipment, and sells its products throughout the world. At the end of 1994 it had 16 percent of the world's market for tires. Its sales were growing at an annual rate of 4.2 percent versus an industry average of 2.5 percent.

The picture was very different in 1991. At that time the company was

heavily debt-laden and was losing money rapidly. It had a 14 percent share of the world's tire market. In June of that year Stanley C. Gault became the chief executive officer (CEO) of Goodyear. Gault had previously been the senior vice president of General Electric followed by a turn as CEO of Rubbermaid. During his stewardship of Rubbermaid, he led the transformation of the company from a little-known maker of household cleaning items into a \$3-billion-a-year maker of 4000 different products. Given this record, he was brought to Goodyear to turn the company around.

Gault accomplished the turnaround through a series of policies. He quickly sold off Goodyear's nontire businesses, freeing the company to focus its core skills. He engineered a sharp reduction in staff, led the development of a range of new products, and expanded sales by changing its distribution policy. He also issued new stock which helped to reduce its immense debt. By 1993 Goodyear's debt had been drastically reduced. Moreover, not only had the company returned to profitability, but its profit of \$388 million that year was more than all other tire makers in the world combined.

The change in distribution channels was a major shift in policy. Historically the company had sold exclusively through independents, many of them selling only Goodyear products. In 1992 Gault initiated a policy to begin selling tires through large retailers in addition to independents, starting with Sears, Roebuck & Co., the largest tire retailer in the United States. The following year, he announced that Goodyear would also begin selling its tires to Wal-Mart Stores, the nation's largest retailer, and to Discount Tire, a major tire discounter.

Not surprisingly, this move to major retailers generated a great deal of antagonism among independent Goodyear dealers. In early 1995 the company revamped its sales organization. This move was preceded several years earlier by a sales force automation (SFA) development project to automate Goodyear's sales and marketing systems.

Widespread interest in automating sales forces is a 1990s phenomenon. A number of technological developments contributed to the growing popularity of SFA, including lightweight portable computers with multimedia capabilities and graphical user interfaces, the proliferation of LANs and WANs, and integration of databases distributed throughout the enterprise, thus enabling easy access to a wide range of enterprise data. The popularity of such fourth-generation tools as spreadsheets and word processors have made SFA systems easier to use and more productive, as has the spreading use of electronic mail.

Observers believe these systems offer a range of benefits to organizations. Their most basic benefit is that they can increase the productivity of the sales staff. This has been a driving force both because of the intensified competitive environment putting pressure on

sales staffs, and because of the business need to keep costs low (in some cases downsized sales forces are expected to increase sales). Traditionally, many salespersons had spent a significant amount of time prior to a sales call collecting information from various computers and via telephone (see Figure 8.15 to obtain a picture of the sales process). For example, a study demonstrated that the sales staff of Deere Power, a maker of diesel engines and other heavy equipment, often spent a full day collecting data before a sales call. Studies indicate that the average sales call now costs about \$250, up from only \$80 as recently as 1975.

Efficiencies can be achieved in a variety of ways, as illustrated in Figure 8.16. First, these systems can help salespersons to select the best sales prospects. Moreover, with an SFA system, the salesperson can quickly load

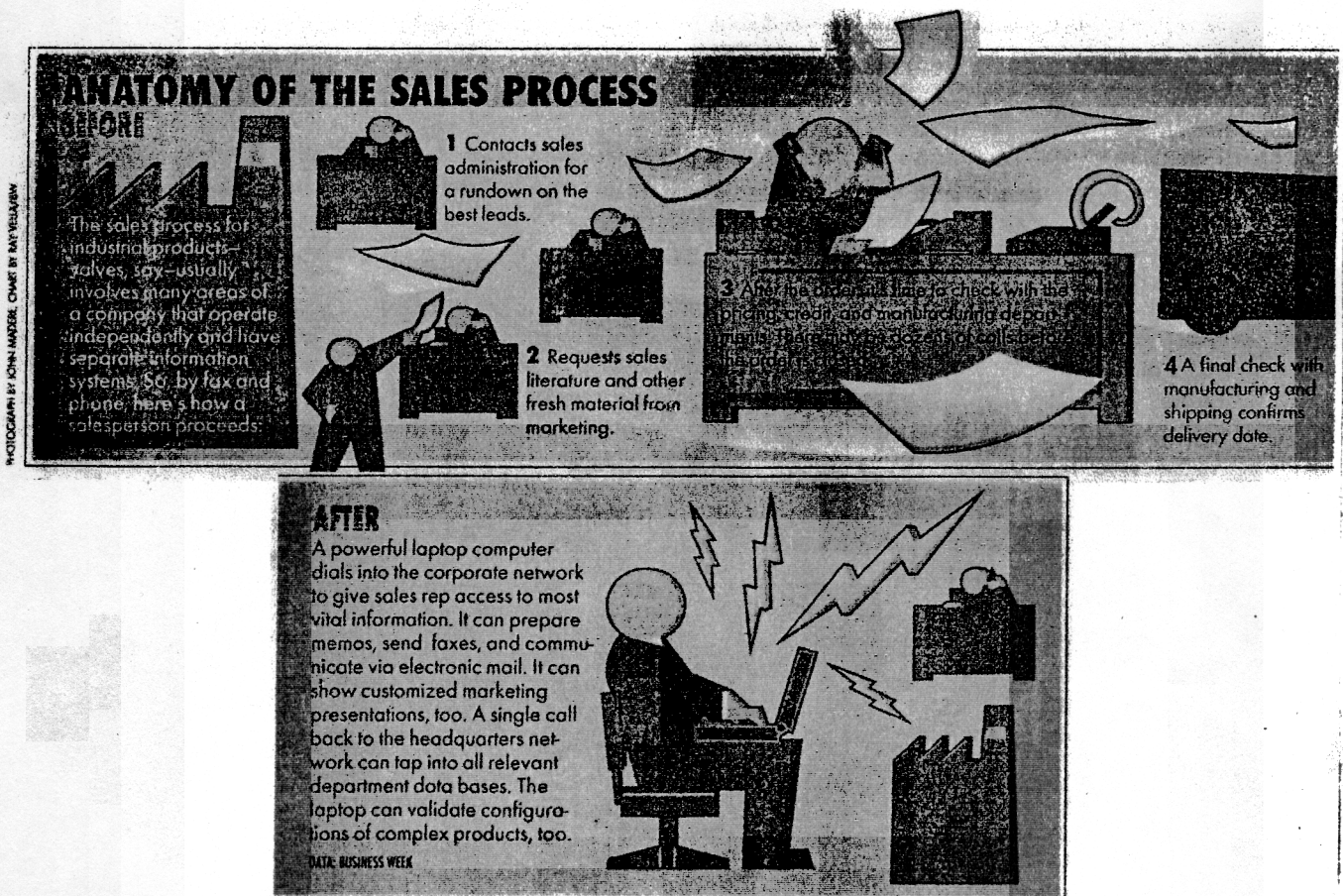


FIGURE 8.15

The sales process before and after automation. Laptop computers and corporate networks can radically streamline the sales process and give sales representatives new capabilities. Adapted from: "Anatomy of the Sales Process," Business Week, October 25, 1993.

onto his or her laptop computer all the latest data needed for that day's calls. In addition to customer and product information, the computer will carry production and product availability data, order forms, pricing information, an electronic calendar and a tickler file, word processing integrated with mail-merge capabilities and reporting facilities, and even access to e-mail. Studies also show that the average sales rep traditionally spends 9 to 11 minutes per day per account on paperwork, offering immense room for savings through the use of the software on the laptop. For example, with an SFA system, the sales staff will no longer need to write product descriptions, add up orders, call in about production status, or check the order for errors, leaving them more time for selling. Many systems even electronically transmit the orders to the organization.

Automated systems also can result in higher quality sales calls. While the salesperson will actually be in the customer's office, she or he is able to respond as if the customer had come into the salesperson's own office. The salesperson not only will be able to talk about the product and show catalog pictures (stored on the computer) but also might be able to show short video clips. The computer files will include up-to-date production data, allowing the salesperson to respond immediately to a customer's timing requests. Moreover, because the salesperson's computer carries all that data, the salesperson does not need to tie up the client's telephone trying to get cost or production data prior to closing a sale.

SFAs usually offer the ability to forecast sales, to calculate commissions, and to adjust sales quotas, all

while in the field. They also support team selling which is particularly valuable for large corporate accounts. They have proven to be valuable in generating new sales. For example, they aid in closing the sale on the spot because of the availability of production data and access to full pricing data so that the sales rep is able to respond immediately to a competitor's price. Companies have also found that after the installation of a sales force system, their current customer attrition rate drops.

Problems do exist with sales force automation systems. First, studies indicate that a new system costs from \$7500 to \$15,000 per salesperson to develop. Once in place, they usually cost \$2500 to \$3500 per salesperson per year for maintenance and support. SFAs can be expensive, resulting in multimillion-dollar systems. Moreover, some com-

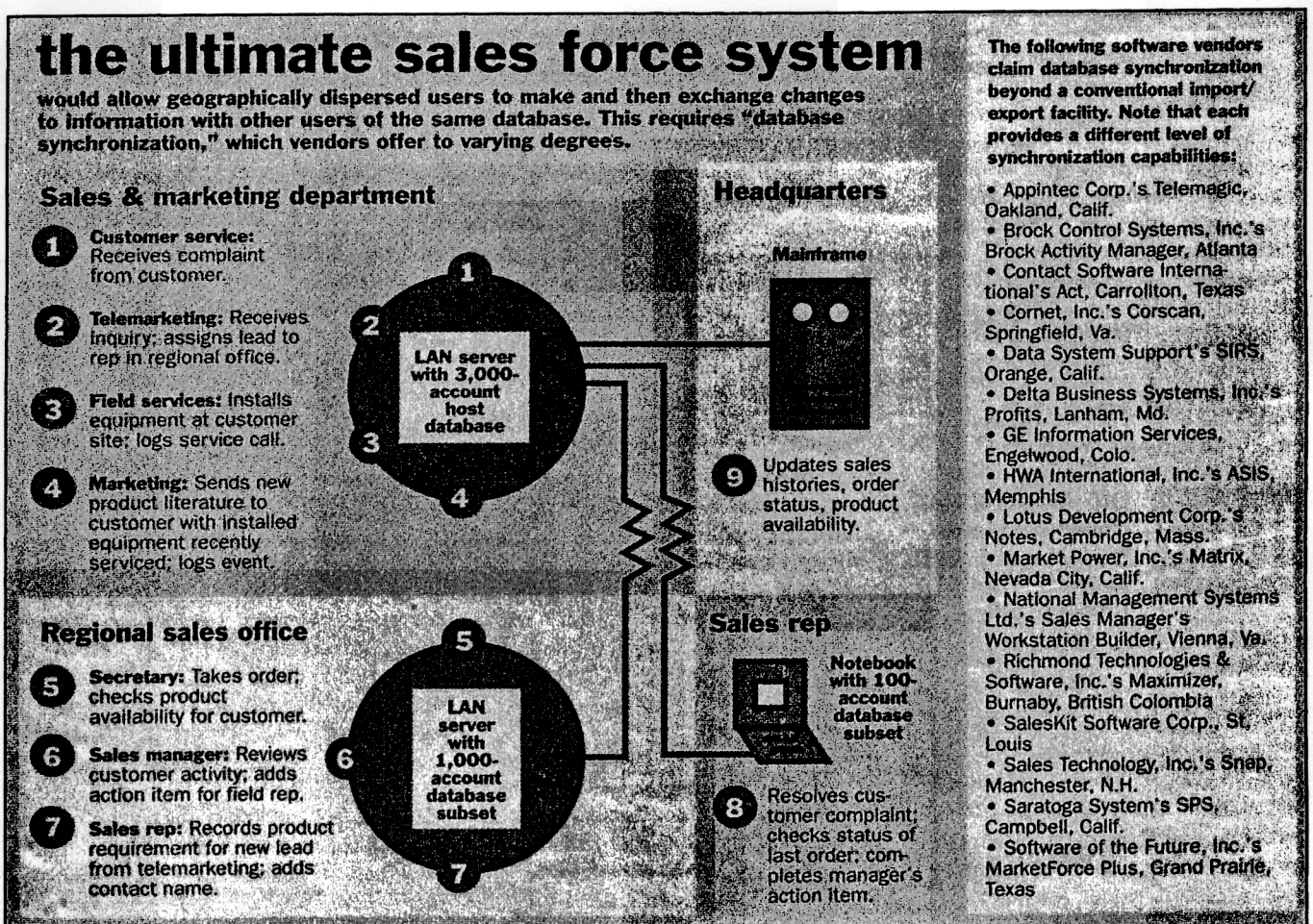


FIGURE 8.16

The power of sales force automation. If properly designed to take advantage of powerful networks, databases, and desktop computers, automated sales force systems can deliver a wide range of capabilities. From: "The Hardest Sell," Computerworld, September 20, 1993.

panies install them without redesigning the sales function and other related functions. Without changing the way the sales staff works and the way the organization both supports the sales staff and makes use of sales data, that company will probably benefit very little from the new, expensive system. Applications that cut down on administrative time for sales reps don't automatically translate into more sales. Another key problem is the failure of top salespersons to use the system. Sales persons' strengths include individualism, a strong memory, and their people skills, and many reject the idea that carrying a laptop computer can help them.

Goodyear's North American tire division, with more than 500 sales staff, covers all the United States, from Maine to Hawaii, from Florida to Alaska. The sales force automation project began in early 1992. The major goal of the project was to boost the efficiency of marketing and sales departments, to make them more effective, and to boost customer relations (especially with the independent dealers). Management believed that the sales staff put in too much *windshield time* (hours spent traveling between home, office, and customers). Document communication was by regular mail, overnight delivery, and fax. The division management seldom was able to talk with the sales staff—after all, the division covered five time zones—and so they felt out of touch. The previous system tracked orders and deliveries on Goodyear's Amdahl mainframe running custom COBOL applications. As with many older mainframe systems, Goodyear's had very poor reporting and analysis features and was difficult to use. Moreover, it had no repository for institutional memory. When salespeople left, they took everything about the customer with them. Goodyear did expect to improve customer service and customer satisfaction. Management wanted the system to support their sales reps in assisting dealers with everything from advertising and sales, to business trends, cutting customer expenses, and running special events and

promotions. They planned a system that would replace inadequate or absent technologies with an integrated sales and marketing system that would also work well with Goodyear's suite of financial applications.

Goodyear equipped its sales staff with laptop microcomputers, fax modems, and application and communication software. The core application of Goodyear's sales force automation system, dubbed Samis (Sales And Marketing Information System) is SPS. SPS distributes customer records to sales staffers, engineers, and technicians. The system also uses Metaphor, an IBM data access tool that extracts data from Samis and integrates it with the old COBOL executive information system (EIS). For communications software Goodyear used Advantis Passport.

With the new system, the sales person is able to download data from Goodyear's mainframe DB2 database in the morning into his or her laptop microcomputer, carry all the data needed that day in the laptop so that sales person will not normally need to go on-line during the day, and then upload any new data (orders, customer-contact reports, e-mail) in the evening. Samis also contains software to lighten the paperwork load. The sales staff can generate mailings to targeted customers; store small, useful details about the Goodyear dealer; and analyze data on shifts in consumer demand and in buying habits for the customer. The system supports key word searches in the DB2 database, enabling the sales staff in one area to learn about and monitor sales programs and promotions in other areas. Samis also supports the customers directly. For example, according to Jim McDonough, a Goodyear franchisee and owner of the Millburn, New Jersey, Tire & Auto Service, "We go on-line all the time to track my accruals." Finally, the system is much more than a laptop system. Middle management uses the system to communicate with the 26 sales offices and corporation management.

Goodyear's marketing department tracks how its staff uses the sales force

automation system. According to Al Eastwood, Goodyear's VP responsible for replacement sales to franchisees and independent dealers, the company believes Samis is a worthwhile investment, even though its benefits can't be quantified. "How did you run your business before you could pick up a phone?" he asks. ■

Source: Zachary Schiller, "And Fix That Flat Before You Go, Stanley," *Business Week*, January 16, 1995; Timothy Middleton, "Tire Maker Burns Rubber," *Information Week*, October 31, 1994; Jack Falvey, "The Hottest Thing in Sales Since the Electric Fork," *The Wall Street Journal*, January 10, 1994; Michael Fitzgerald, "Users Trying Again with Sales Force Automation," *Computerworld*, November 28, 1994; and John W. Verity, "Taking a Laptop on Call," *Business Week*, October 25, 1993.

Case Study Questions

1. What problems did Goodyear face, and what competitive strategy did the company follow to address these problems?
2. How did sales force automation fit in with and contribute to its strategy? How did the fact that the Samis system was networked support Goodyear's strategy?
3. Evaluate both the benefits and shortcomings of the Samis system. How could it have better supported the company's strategic goals?
4. Evaluate the role of Samis in addressing the disgruntled small dealers and franchisees. Was this a successful move? Was Goodyear's overall strategy successful? Explain your answer.
5. What management, organization, and technology issues had to be addressed when Goodyear implemented sales force automation?
6. If Internet was available then, should Goodyear develop the system based on the WWW technology? Analyse.