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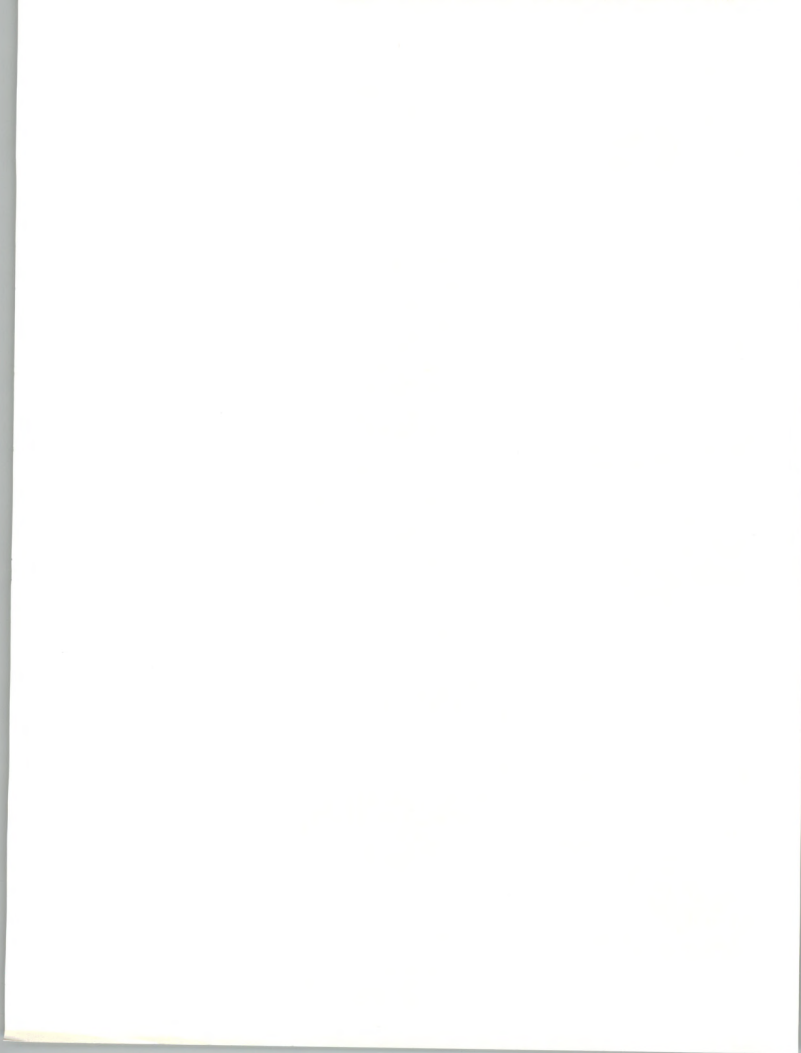
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Information
Services
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**Information
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Retail
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RETAIL DISTRIBUTION SECTOR

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Information Systems Program (ISP)

Information Systems Planning Report
Retail Distribution Sector

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I

Major Issues

I

Major Issues

During the past five years automation for the retail industry has been accelerating rapidly. Revenue from information services sold to this industry is growing at 22% annually, and INPUT expects retail to remain one of the fastest-growing markets for computer services. Information Services departments do not account for all of this growth, since there are an increasing number of applications of technology that do not fall under the jurisdiction or budget of IS. However, IS departments in the retail industry are increasing spending at a healthy rate that reflects improved technology and the competitive necessity to automate.

This report includes a brief overview of the forces driving automation in the retail industry and a discussion of some of the issues and problems encountered by IS managers, along with an analysis of IS budgets and a look at applications and the impact of technology on the retail industry. In the impact-of-technology section INPUT divides retail into six subsectors:

1. Department Stores
2. Specialty Stores
3. Food Retailers
4. Eating and Drinking Establishments
5. Automobile Dealerships
6. Gasoline Service Stations

A
Driving Forces

Retail Distribution is among the two or three most sophisticated industries in its use of information systems technology. Computers improve efficiency in the warehouse and back office, and raise the level of service that stores can provide to their customers. For these reasons, automation has become a competitive weapon.

Profit margins in the retail industry are typically quite low, so pressure to improve efficiency at all levels is strong. Minimizing inventory and providing the best possible customer service are the keys to maximizing profits, and therefore are the issues most commonly addressed by auto-

mation. Extensive networked systems gather and maintain information on sales, demographics, and inventory to assist in every department:

• The marketing department analyzes sales data to help focus its efforts.

• Inventory and distribution departments monitor stock and schedule replenishments.

• Customers check out rapidly using automated point-of-sale systems. These systems may also make price and item availability information available on request.

Applications for retail and wholesale are increasingly interdependent. For example, many wholesalers now require their retailers to use EDI services for purchase orders. In some cases, retail inventory control systems automatically reorder stock when it reaches a certain level. As technology for retail improves, it opens new possibilities for wholesale, and vice versa.

Retail is always the first and most profoundly affected industry sector when there is a change in the economy. The efficiency and quickness of response afforded by extensive automation is therefore especially important to this industry.

Competition is the fundamental driving force behind all others. When asked how technology is used to give his company a competitive advantage, one IS manager replied: "It isn't—it's just helping us maintain our current position."

Exhibit I-1 summarizes driving forces for automation in retail.

B
Issues and Objectives

As mentioned earlier, the fundamental objective of every participant in the retail industry is to improve competitive position by providing the best possible customer service, and by making operations as efficient as possible. Clearly, automation plays an important role in improving competitive position, but there are always obstacles that keep the implementation and operation of automation from proceeding smoothly. This section begins by discussing some of the objectives of IS departments as they fulfill their roles in making retailers more competitive, and concludes with an overview of some of the issues IS managers face in pursuing those objectives.

1. Objectives

The greatest potential for improving efficiency and increasing profit margin lies in the area of distribution/inventory management. Sixty percent of the IS managers we spoke with list implementing or expanding their use of Electronic Data Interchange (EDI) as an objective for the coming year. All of the major department stores INPUT contacted plan to implement or increase EDI use in 1988.

EXHIBIT I-1

RETAIL DISTRIBUTION—
DRIVING FORCES

- Automation Is a Competitive Necessity

- Efficiency Improves Profit Margins

- Retail and Wholesale Applications Are
  Increasingly Interdependent

- Rapidly Changing Economy and Consumer
  Preferences Require Rapid Responses

The benefits of EDI include significant reduction in paperwork, and increased speed in placing orders to vendors. EDI alone can reduce the cost of purchase orders in the short run. In the long run (3-5 years), however, IS managers plan to develop integrated distribution systems that will employ distribution requirements forecasting and/or expert systems along with EDI. In a few cases there are plans to implement automatic inventory replenishment so that whenever stock at a given store reaches a certain level, in-store computers automatically place an order to replenish stock.

Automation can also help improve marketing and customer service. One common approach is to distribute processing power to individual store locations. Distributed processing is valuable for marketing since it allows stores to adapt their product mixes and marketing strategies to local markets based on local sales data. Distributed processing improves customer service by tailoring each store's focus to a smaller market than would be possible if processing were done only at a central location with aggregate data. For these reasons, one large department store chain INPUT contacted plans to have a minicomputer in every store within five years.

A less urgent objective of IS departments in the retail industry is implementing in-store video marketing devices. These include interactive

displays, which may have touch screens and/or keyboards with which customers can order goods.

To make full and efficient use of automation, applications need to be integrated. The IS managers we spoke with indicated a preference to purchase integrated systems, but also commented that, due to the rate of change in technology and business needs, this integration has proved difficult to implement. For the most part, IS is replacing individual systems when necessary and is integrating a step at a time.

Exhibit I-2 summarizes the major objectives.

EXHIBIT I-2

RETAIL DISTRIBUTION—
I.S. OBJECTIVES

- Install/Evolve EDI

- Distribute Processing Power

- Evaluate In-store Interactive Marketing Systems

2. Issues

Of course, there are always obstacles. Some of these include protocol standards for EDI, budget restrictions, and obsolescence.

Although retailers are eager to use EDI, many are holding back until standards are developed. Tom Rittenhouse of Strowbridge and Clothier says in an interview with *STORES* magazine (Sept., 1987) that his company wants to start using EDI but, "We don't want to support a couple hundred protocols. We want to support a particular protocol and a particular format so we can communicate with all vendors the same way."

There is a significant effort afoot to standardize protocols and formats. There are at least 15 agencies and associations involved in developing EDI standards. Perhaps the large number of groups involved is an indication that we are still a long way from having useful standards.

Regardless of the lack of standards, the market for EDI services in all industries is growing at a phenomenal 88% per year. IS managers are faced with a decision between reaping the benefits of EDI as it is, while accepting the lack of standards, or waiting to reap the future benefits of EDI when it is closer to being standardized. The decision should be based on the number of trading partners a retailer deals with, and the degree of standardization in its particular industry segment.

Eighty percent of retail IS managers are under pressure to reduce their budgets as a percentage of sales. This is not to say that IS managers are expected to decrease the dollar amount of their budgets. Rather, they are expected to increase their budgets at a slower rate than for the company overall.

These budgetary restrictions are a source of frustration for IS managers who believe that technology reduces costs in other departments by greater margins than it increases IS costs. Decreasing hardware costs help mitigate this budgetary pinch, but restrictions are still a problem. In the most progressive companies, the IS budget grows in proportion to company growth, but no IS managers reported budgets growing more rapidly than company revenue.

Another problem encountered by a large majority of interviewees is hardware obsolescence. One respondent expressed interest in converting from manual-entry to laser scanning at the point of sale but, being tied down by the company's 4000 manual-entry registers, is forced to wait until the old, relatively inefficient machines wear out before installing scanners. This delay results in a piecemeal approach to implementing automation. Although a piecemeal approach may be the only achievable approach, it yields a hybrid system that requires more management and maintenance than does a single integrated system.

Some of the day-to-day operational concerns of IS managers include the following:

- Difficulty maintaining old equipment
- Other maintenance problems due to mergers or closures among vendors
- Data integrity and repetitive data entry
- Overdependence on central mainframes
- Insufficient resources for training users

Exhibit I-3 lists the major issues of IS departments in the retail industry.

EXHIBIT I-3

RETAIL DISTRIBUTION—
I.S. ISSUES

- Lack of Standardization in EDI

- Pressure to Reduce IS Budget as Percent of Sales

- Hardware Obsolescence

C

Impact of Technology

Food retailers are the leaders in retail automation. The grocery industry was the first to implement bar codes, and has taken the fullest advantage of the opportunities that bar coding provides. Other segments of the retail industry have been a bit slower to implement the technology, but are now rapidly catching up. In all segments of retail, technology has had, and will continue to have, a profound impact on the competitive environment.

Data-capturing devices and point-of-sale (POS) terminals provide huge volumes of data for sales analysis and inventory tracking. These data and functions form the core of retail automation, making it possible for retailers to expand profit margins by reducing stored inventory, and by improving customer service.

Connecting POS terminals to a central mainframe gives chains central-ized control over prices, inventory, and general marketing strategies, whereas distributed processing gives individual stores the ability to do "surgical marketing," i.e., to use local sales data to develop a product mix and marketing strategy based on chain policy, but modified to address a specific local market.

The above applies to all segments of the retail industry. The following section includes comments on the impact of technology in each of six specific segments.

1. Department Stores

Department stores have lagged behind grocery stores in use of automa-tion. As Stanley Marcus says in an interview with *STORES* magazine

(May 1987), "I'll guarantee you it will take longer to get two items processed (in a department store) than it will to get 15 grocery items charged and paid and sacked in a supermarket." It is still the case that department stores are slower, but this is changing as department stores adapt new data-capturing techniques.

A dichotomy is developing in the department store segment between the full-service department stores committed to making shopping a pleasurable experience, and the mass-merchandisers committed to providing variety and low prices. This dichotomy is perhaps more a reflection of the state of society than the state of technology, but technology makes the dichotomy possible. Mass merchandisers use inventory control, laser scanning, and POS technology to achieve minimized inventory costs and quick checkout. Full-service department stores, however, use their inventory tracking and purchase ordering capabilities to locate specific items for customers and to speed special orders.

Some prognosticators see department stores being radically altered by technology in the future. Store designers daydreamed about the department store of the future in a May, 1987 article in *Chain Store Executive Age*: "We've kicked around the idea that people will go to a Macy's that's no bigger than a phone booth. You'd have a terminal and a screen. You could shop in one location in five minutes and have the thing delivered to you or waiting for you at the other end of the building, like in a catalog showroom."

This is an unlikely scenario. It is difficult to imagine that Americans would give up the ancillary pleasures of shopping in favor of a shopping environment like the one described above, but technology will certainly have a significant impact on the way department stores run their businesses. EDI will reduce the paperwork involved in ordering stock replenishments, and should reduce errors by decreasing the number of times orders must be entered. EDI, POS, and expert systems will combine to help the distribution channels of large chains to approach Just-In-Time (JIT) inventory replenishment.

2. Specialty Stores

The category of Specialty Stores encompasses a wide variety of retail businesses, so it is difficult to generalize about the state of automation in this segment. Examples of goods carried by specialty stores include furniture, electronics, jewelry, apparel, shoes, sporting goods, and pharmaceuticals.

Independent specialty stores and very small chains are slow to automate because they lack the economies of scale from which larger chains benefit. Most large chains, however, are actively automating. The GAP (which owns Banana Republic) is involved in a major revamping of its systems, and Radio Shack, being a subsidiary of a computer systems vendor, is extensively automated.

The impact of automated inventory control systems is greater among specialty stores than among department stores because of the smaller number of items stocked. The smaller number of items makes for a less complicated distribution network, which lends itself more easily to automation. Besides this difference, the impact of technology on specialty stores is much the same as it is on department stores.

3. Food Retailers

Food retailers have more-complete automated systems than retailers in any other segment. In many cases, a grocery chain mainframe connects with every store in the chain, so chainwide price changes can be implemented from the central mainframe, and POS systems can be polled easily.

The changes brought about in retail by technology have been dramatic. Laser scanning, debit card machines, and automated check authorization machines have improved checkout time to such an extent that all major grocery chains have been forced to implement them in order to stay competitive. Grocery chains have now turned to other service-oriented marketing ploys to gain a competitive edge. Automation has ushered in a new age of service competition among grocery stores where price competition used to be the only criterion.

4. Eating and Drinking Establishments

The use of automation in restaurants is similar to its use in department and specialty stores, except that restaurants must place even stronger emphasis on providing service to customers.

Fast-food franchises are the most advanced technology users in this segment, using sophisticated point-of-sale devices to collect very precise sales information. This information directly affects menu development, pricing, and marketing strategies.

Full-service chain restaurants use the same kinds of systems in ways that are more transparent to customers. In addition to using the information to develop menus, pricing, and marketing, full-service restaurants use the information to help schedule food preparation.

5. Automobile Dealerships

"Megadealerships" and multifranchise dealerships are the coming standard in this segment. Nearly 60% of all dealerships are now multifranchise, and average sales per location have reached $10 million. The bigger an organization gets, the more useful—or necessary—automation becomes.

The principal effects of automation in auto dealerships are to link franchises together, to catalog parts departments, and to provide sales support.
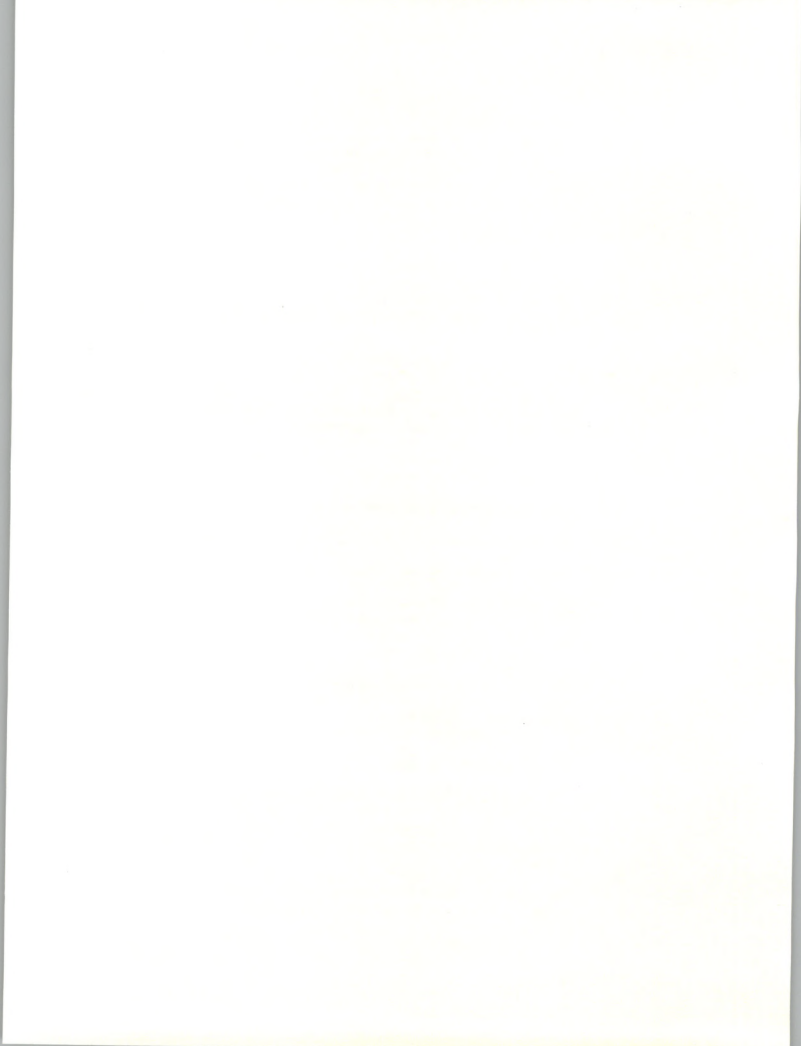
6. Gasoline Service Stations

The current emphasis in this segment is to make available a number of different payment methods. Credit processing technology has made it possible for oil companies to accept major bank credit cards, bank debit cards, and oil company credit cards.

Technology has also improved security by linking gas pumps to a POS terminal in the cashier's booth. With this configuration the cashier can remain behind the cash register, and is less vulnerable to robbery.

Service stations have particular difficulties in implementing and maintaining automated systems. Individual stations are often located in remote places, making service calls difficult and expensive. The environment of most gas stations is not conducive to the proper care of electronic equipment, and it is difficult to find personnel with the knowledge and background to run the systems. In addition, distributing systems to all stations is a complex process because of the large number of locations. One major oil company has been working for 18 months to implement a companywide system of POS devices and controllers, and considers its major goal for the coming year to be carrying the systems to as many locations as possible.

Exhibit I-4 summarizes the impact of technology on the retail industry.

EXHIBIT I-4

RETAIL DISTRIBUTION—
IMPACT OF TECHNOLOGY

- Huge Volumes of Information from POS Technology

- Distributed Processing Makes Surgical Marketing Possible

- Reduction in Store Inventory

- Paperwork Reduction through EDI

II

New Applications

II

New Applications

The central focus of a retail system is collecting data from the point of sale. The number of applications that utilize and analyze these data is practically unlimited.

Other applications that do not directly utilize point-of-sale information include EDI, interactive marketing systems, and credit authorization.

Relatively few retailers use POS data to automatically order inventory replenishments. Only 20% of the retailers INPUT spoke with have any kind of automatic replenishment system, and most of these are limited to a few key items. However, 40% have plans to implement automatic replenishment systems within five years.

Distribution and inventory control systems should change considerably over the next five years as standards for EDI are developed and as automatic inventory replenishment applications and techniques for minimizing stored inventory improve. With quick communications from EDI and with frequent, accurate sales reports from POS systems, the whole distribution network speeds up. Retailers order next week's inventory based on last week's sales information rather than using sales data compiled over several months to order large quantities well in advance. In this situation, misjudgments in ordering quantities or styles are less costly and consumers are more likely to find the items they want on the shelves. Ordering stock becomes a reaction to consumer behavior rather than a guess as to what consumer preferences will be.

Interactive marketing systems are still largely a thing of the future; however, automobile dealerships, department stores, and specialty stores have begun to take advantage of the technology.

Reynolds and Reynolds provides auto dealerships with systems that a car buyer can use to assemble the model of his/her choice with the features and options of his/her choice. The completed vehicle appears on the screen and the consumer can take the car for a simulated test drive.

Many department and specialty stores use video demonstrations of products. The next step is interactive video/touch-screen displays that allow customers to select information on specific products. One department store INPUT spoke with plans to significantly expand its use of interactive marketing technology within the next five years.

Expert systems are also generally considered to be the systems of the future, but consultant Bob Zimmerman (*STORES*, September, 1987) believes such systems are currently viable, if not yet refined. Expert systems are well suited to considering all the variables involved in planning inventory shipments to all locations in a chain. One major department store we spoke with will be implementing expert systems for inventory management in 1988.

Exhibit II-1 lists some of the new applications being evaluated or implemented by IS departments in the retail industry.

EXHIBIT II-1

RETAIL DISTRIBUTION— NEW APPLICATIONS

- Electronic Data Interchange (EDI)

- Automatic Inventory Replenishment

- Interactive Marketing Systems

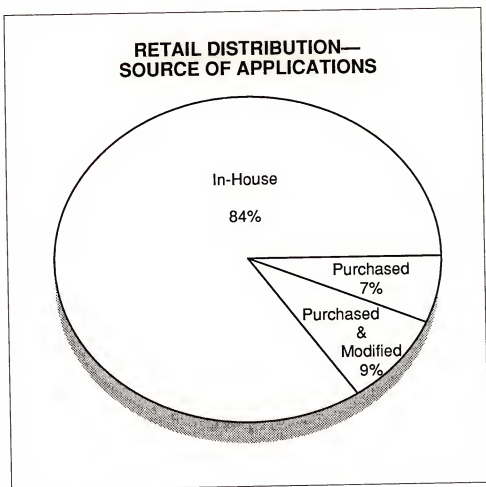- Expert Systems for Inventory Control

Exhibit II-2 shows the sources of applications software for the retail industry.

- Retailers develop 84% of their applications software in-house.

- They purchase and modify 9%, and use the remaining 7% directly off the shelf.

EXHIBIT II-2

**RETAIL DISTRIBUTION—
SOURCE OF APPLICATIONS**

In-House

84%

Purchased
7%

Purchased
&
Modified
9%

III

Budget Analysis

III

Budget Analysis

The importance of automation as a competitive weapon is reflected in the healthy 11% growth rate of IS budgets. Still, no IS budget is increasing at a faster rate than corporate revenue.

Exhibit III-1 shows a breakdown of IS budgets in the retail industry and expected growth for 1988.

EXHIBIT III-1

RETAIL DISTRIBUTION—1987 BUDGET DISTRIBUTION AND 1987-1988 CHANGES IN THE RETAIL DISTRIBUTION SECTOR

Budget Category	1987 I.S. Budget (Percent)	1987-1988 Expected Budget Growth (Percent)
Personnel Salaries and Fringes	43	9
Mainframe Processors	27	8
Minicomputers	3	15
Microcomputers	2	7
Total Hardware	32	8
Data Communications	4	21
External Sortware	7	13
Professional Services	1	15
Software Maintenance	1	10
Hardware Maintenance	6	7
Other	6	1
Total	100	11

- Data communications is the fastest-growing budget item at 21%. This rapid growth reflects the rapid increase in distributed processing and EDI, as well as the increasing importance of communications to competitive health.

- Mainframe processors account for the largest chunk of the hardware budget, with 27% of the overall IS budget. This figure is considerably higher than last year's figure of 12.2% because more of the large retailers interviewed this year include distributed systems, and in some cases POS terminals, in store budgets rather than in the IS budget.

- Personnel costs make up 44% of the IS budget. This is the largest single item in the budget, and is growing at a healthy rate of 9%.

Exhibit III-2 shows the distribution of expected budget change. Thirty-three percent of the IS managers interviewed expect budgets to remain the same in 1988 as in 1987. The other 67% expect budgets to increase. None expects the IS budget to decrease.

EXHIBIT III-2

RETAIL DISTRIBUTION—
EXPECTED CHANGE IN I.S. BUDGET
1987 TO 1988

Remain the
Same

33%

Increase

67%
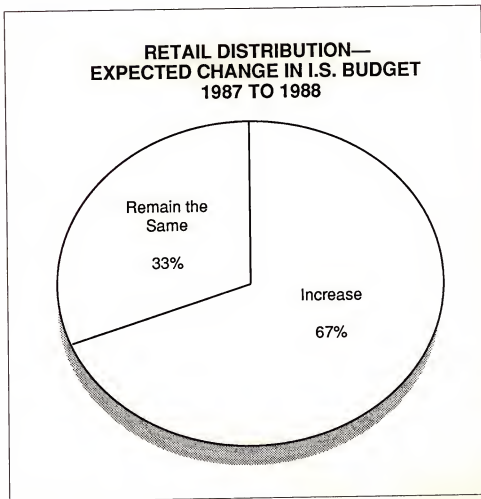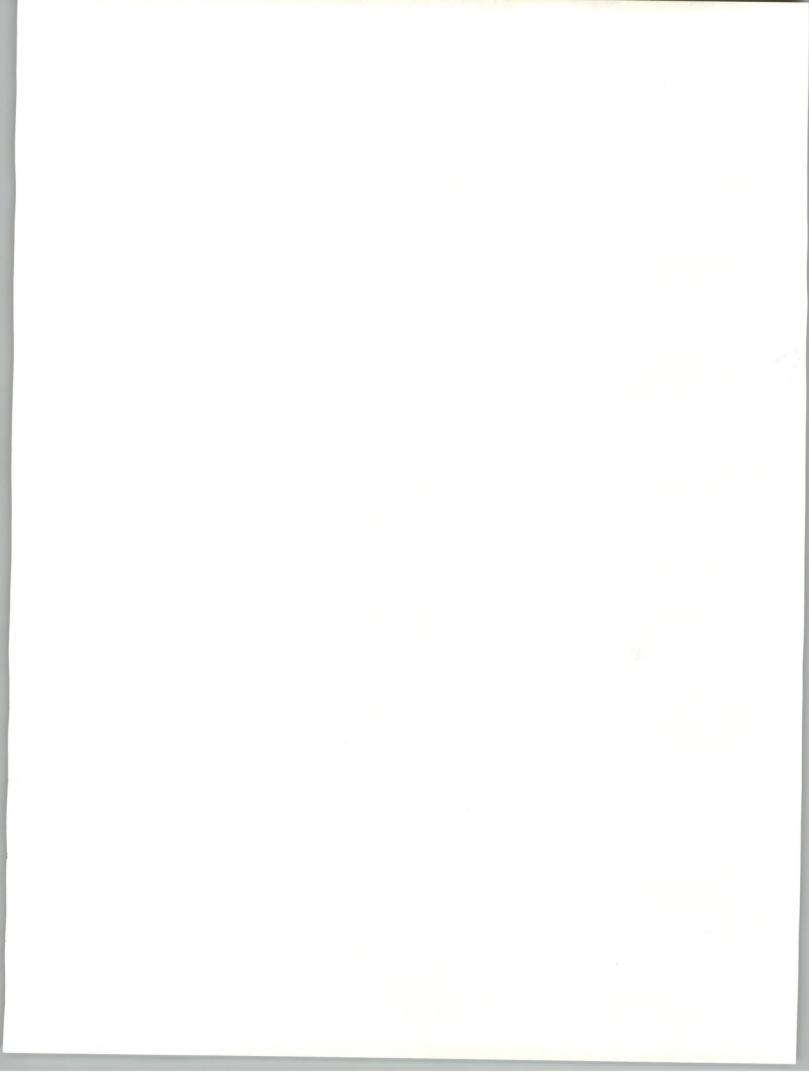
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INPUT provides planning information, analysis and recommendations to managers and executives in the information processing industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions. Continuing services are provided to users and vendors of computers, communications, and office products and services.

The company carries out continuous and in-depth research. Working closely with clients on important issues, INPUT's staff members analyze and interpret the research data, then develop recommendations and innovative ideas to meet clients' needs. Clients receive reports, presentations, access to data on which analyses are based, and continuous consulting.

Many of INPUT's professional staff members have nearly 20 years experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning, This expertise enables INPUT to supply practical solutions to complex business problems.

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