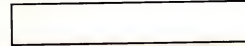
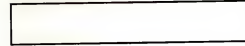
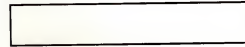
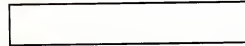
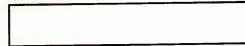
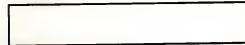
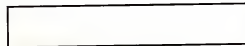




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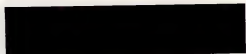


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1987-1992

**Human
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1987 - 1992**

HUMAN RESOURCES



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Human Resources***

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I

Issues, Trends, and Events

A

Introduction

The cross-industry segment human resources consists of payroll, personnel, and human resource management systems.

Companies specializing in payroll services such as Automatic Data Processing (Roseland, NJ) and Paychex (Rochester, NY) are referred to as "service companies." "Software companies" refers to vendors offering human resource management systems (HRMS), examples being Management Science America (Atlanta, GA) and Information Science (Montvale, NJ).

B

Issues and Trends

Human resource managers are concerned with many issues including:

- A better understanding of the workplace and managing people, motivating and developing employees, and improving productivity.
- Providing timely, accurate information to top management and line managers to enable better decision making, and to integrate the human resource (HR) function with the business goals of the organization.
- Achieving the objectives of the human resource function in the most cost-efficient manner, and realizing cost savings in the area of employee benefits.
- The ability to respond to government issues and comply with government (federal, state, and local) laws and regulations.

Payroll services offered by major vendors include payroll processing, tax filing, and personnel reporting. The different payroll applications are shown in Exhibit I-1.

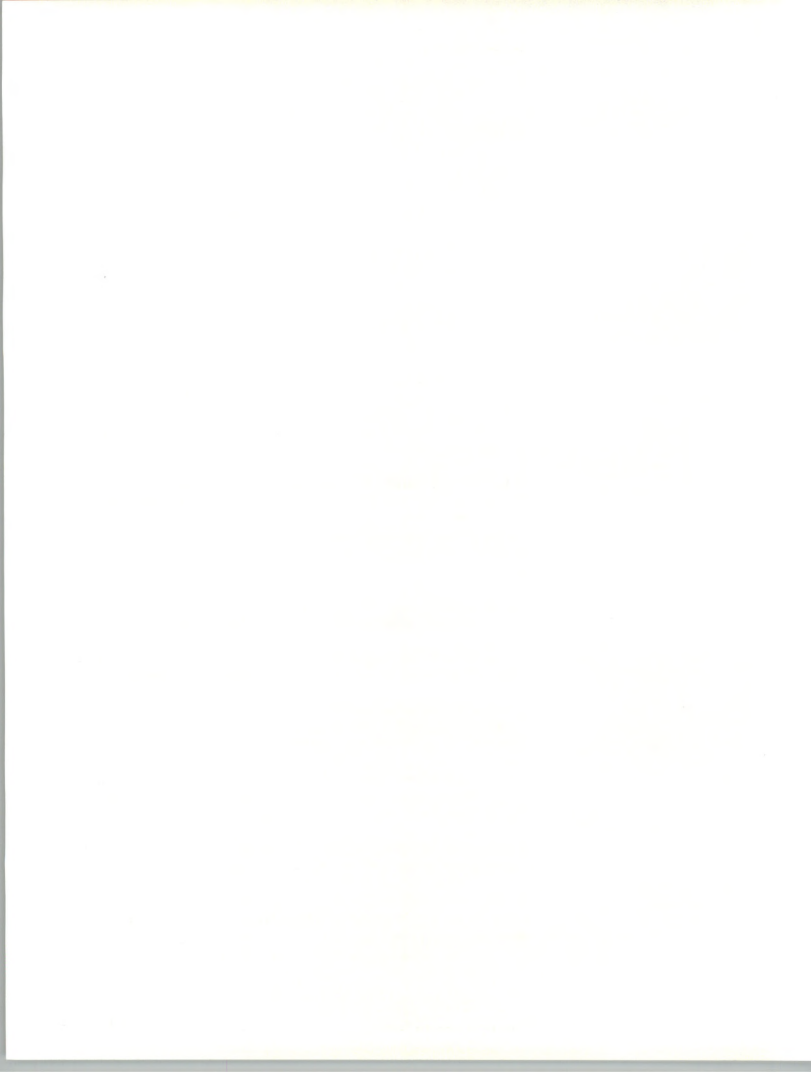


EXHIBIT I-1

PAYROLL SERVICES

- Payroll Processing
- Tax Filing
- Personnel Reporting
- Unemployment Tax Management
- Unemployment Compensation Management
- Government Regulatory Compliance
- Management Reporting

HRMS usage has changed in many ways. Used originally as an administrative and record-keeping system, HRMS has evolved into a comprehensive integrated system used by HR managers and corporate management for business planning and other applications.

HRMS applications include payroll, personnel administration, benefits administration, and government compliance. Exhibits I-2A and I-2B list the various applications of human resource management systems.

The important criteria used by companies when evaluating HRMS are functionality or range of capabilities, vendor reputation, cost to install, cost to support and maintain, ease of use, ease and speed of implementation, and security features.

Microcomputer-based HRMS has improved significantly in recent years.

- Initially developed as a single-user stand-alone system, micro-HRMS can now be used by multiple users in a networked environment.
- The performance characteristics and functionality of micro-HRMS approach their mainframe counterparts. In addition, micro-HRMS are perceived to be easier to use.



- Micro-HRMS are suited for companies with up to 5,000 employees. With continuing advances in microcomputer technology (memory, processing, networking), bigger organizations will be able to use micro-computer-based systems.

EXHIBIT I-2A

HRMS APPLICATIONS

- Payroll
- Benefits Administration
- Employee Relations
- Compensation Administration
- Government Compliance
- Applicant Tracking
- Manpower Planning
- Position Control



EXHIBIT I-2B

HRMS APPLICATIONSPayroll

Payroll Administration
Tax Reporting
Flexible Earnings
Payroll History

Benefits Administration

Flexible Benefits
401(k)
Profit Sharing Plans
IRA
Pension Plans

Employee Relations

Time and Attendance
Grievances
Seniority
Union/Labor Relations
Employee Demographics, History

Compensation Administration

Wage and Salary Structure
Compensation Budgeting
Salary Performance Review

Government Compliance

EEOC
AAP
OSHA
COBRA

Applicant Tracking

Applicant Demographics
Candidate Search
Interview, Selection

Manpower Planning

Career Planning
Turnover Analysis
Human Resource Forecasting

Position Control

Inventory
Budgeting
Forecasting

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C**Events**

Government legislation significantly influences the human resource function. Recent legislation and other laws pertaining to human resources are as follows:

- The Tax Reform Act of 1986 that overhauled the tax system entails changes in the tax structure for three years (1986 - 88).
- The Consolidated Omnibus Budget Reconciliation Act (COBRA) of 1986 mandates employers to extend health benefits to former employees.
- Occupational Safety and Health Administration (OSHA), Equal Employment Opportunity Commission (EEOC), and Affirmative Action Program (AAP) are other important regulatory issues.

In addition to federal laws, employers must also comply with legislation enacted by the different states and local governments. While some states may mimic federal changes, others may develop ways to make up for lost revenues due to tax reform.

D**Factors Spurring Growth**

The key issues and trends stimulating the demand for human resource management systems are the following:

- There is greater corporate awareness on the role of the human resource function. HR has made great strides with respect to its status in the organization. Management has realized the value of employees toward the overall success of the organization and is willing to commit greater resources toward the personnel function. In many companies a senior executive heads the human resource function.
- The business environment is characterized by intense domestic and global competition as corporations strive to cut costs in order to remain competitive. Human resources is an area where cost savings can be realized.
- The economy is witnessing a greater number of mergers, acquisitions, and divestitures. This leads to the reorganization and dislocation of employees, emphasizing the importance of the human resource function.
- The growing shortage of qualified labor has led to greater corporate attention on reducing employee turnover by providing suitable growth opportunities and identifying attractive career paths.



- Many companies offer flexible benefits programs. The number of companies offering these “cafeteria-style” benefits is expected to increase. Flexible benefits administration is facilitated by using HRMS.
- The administration and control of HRMS is moving from the hands of data processing to human resources as the human resource function seeks control over its own resources.

E**Factors Limiting
Growth**

Many companies continue to develop human resources systems in-house, often at great cost compared to commercially available products.

Any pending legislation that deals with human resources inhibits growth of HRMS as companies adopt a “wait-and-see” policy.



II

Market Forecasts



The positive factors influencing this market, discussed earlier, include the following:

- There is greater corporate awareness on the role of the human resource function.
- Human resources is an area where cost savings can be achieved and HRMS enables cost containment.
- Flexible benefits programs are easily administered using HRMS.

Forecasts for user expenditures by delivery mode are shown in Exhibit II-2. Among the different delivery modes, remote processing and batch processing will grow the most rapidly.

Appendix HR-A contains the forecast data base, by delivery mode, for each year from 1987 through 1992.

Processing services (remote computing and batch processing) that refers mainly to payroll and related services is expected to exhibit the strongest growth of 13%.

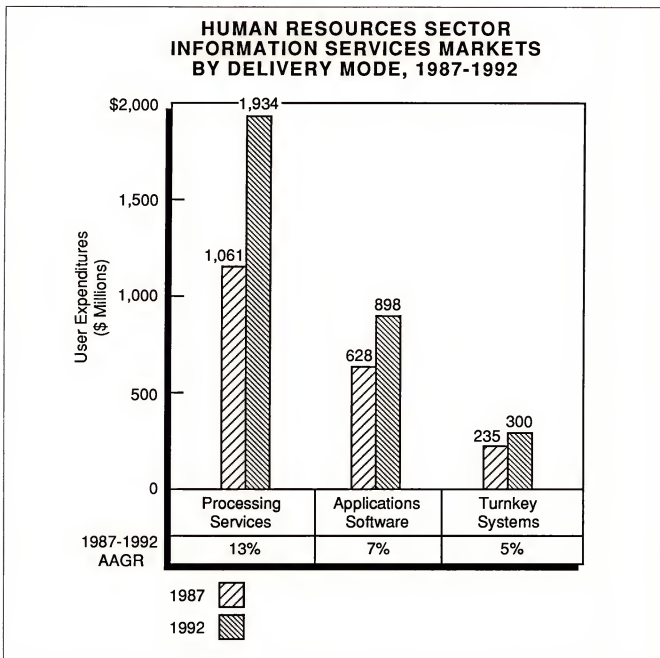
Application software, that is, mainly human resource management systems, is expected to grow 7% through 1992.

- The mainframe/minicomputer segment is expected to grow at a rate of 6% through 1992. Minicomputer software will exhibit a stronger growth compared to mainframe applications.
- Microcomputer software will exhibit the strongest growth of 20%. The proliferation of PCs and increasing computer literacy in businesses are contributing factors.

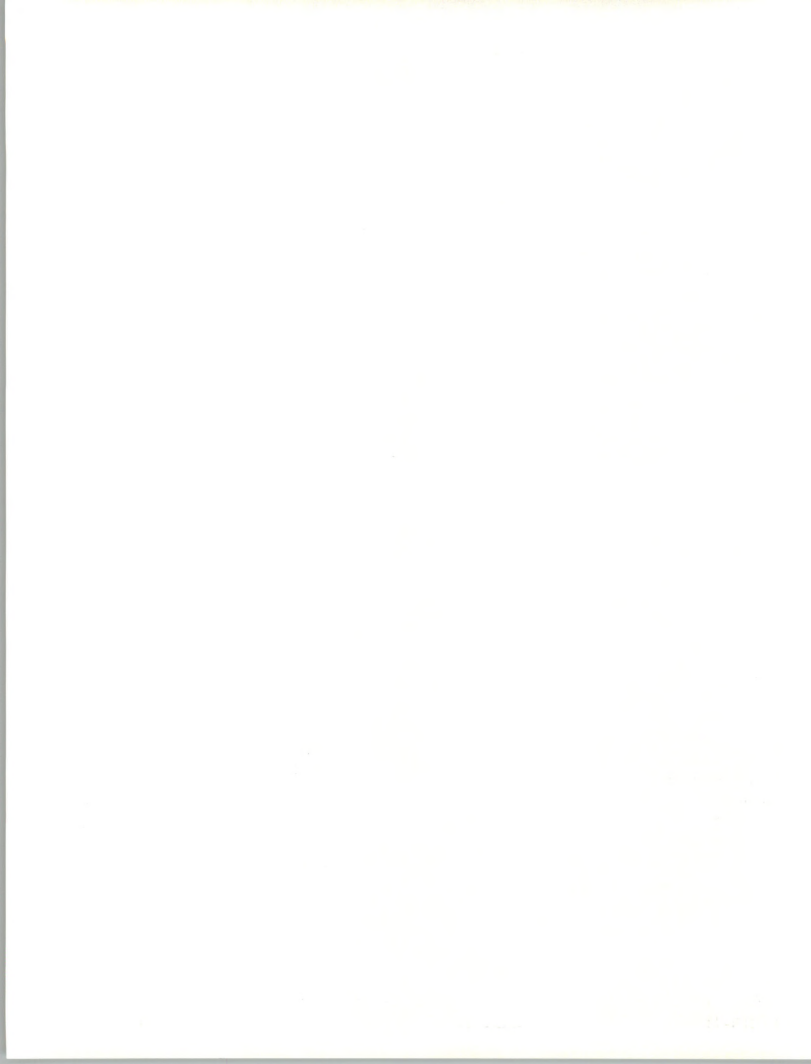
Turnkey systems will exhibit modest growth of 5% through 1992.



EXHIBIT II-2









Competitive Developments







Competitive Developments

A

Introduction

The human resource marketplace is witnessing increasing competition. Each of the two groups, the service companies and the software companies, have broadened their product lines by providing services and products traditionally offered by the other group.

- Service companies like ADP and Paychex offer services such as compensation management and benefits administration that are related to the area of personnel administration.
- Two software companies (Information Science and Tesseract) have moved into the service arena by introducing payroll services on a time-sharing basis.

Competition is increasing in the payroll services arena. ADP is reaching out to small businesses and has built a separate sales force for accounts with fewer than 20 employees.

In the HRMS marketplace, Integral Systems is a fast-growing vendor. The company claims to be the "Number One" vendor, but this is disputed by Management Science America.

As the performance characteristics of microcomputers improve, more companies will consider a micro-based HRMS in preference to minicomputer or mainframe solutions.

Vendors offering microcomputer-based HRMS are growing in number, increasing the possibility of a shake-out in the marketplace. The companies likely to succeed are those that are adequately capitalized, have a strong marketing presence, and offer a full range of products and services backed by extensive service and support.

The leading vendors in human resources are shown in Exhibit III-1.



EXHIBIT III-1

**LEADING VENDORS IN
HUMAN RESOURCES**Payroll Services

ADP

Paychex

Bank of America Business Services

Control Data Corporation Business Services

Mainframe/Minicomputer HRMS

MSA

Integral Systems

InSci (Information Science)

McCormack & Dodge

Microcomputer HRMS

Comshare

Mainframe Micros

Spectrum Human Resource

B

Mergers,
Acquisitions, and
Alliances

The insurance industry is active in the HR marketplace as these companies seek to provide more services to their customers. In August 1986, The Prudential Insurance Company of America acquired Tesseract Corporation. Tesseract markets mainframe-based human resource management systems.

ADP has developed joint payroll marketing relationships with over 800 commercial banks, many of which formerly did payroll processing for their customers.



The human resource market witnessed the following mergers:

- Paychex acquired Payroll General in November 1986. Payroll General provides payroll services to small businesses.
- Integral Systems acquired Sysgen in August 1987. Sysgen develops human resource software for the IBM System/38 family.

C

Vendor Profiles

1. AUTOMATIC DATA PROCESSING, INC. (One ADP Boulevard, Roseland, New Jersey 07068)

a. Products/Services

Automatic Data Processing (ADP) is organized into six major groups. The "Employer Services" division provides payroll services and benefits administration services. Other services include workers compensation, unemployment compensation management, personnel reporting, tax services, and banking interfaces. Most of the Employer Services products are offered through the use of client-site microcomputers as well as by traditional courier delivery.

ADP offers three input modes: Work-sheet, Teledata, and PC Payroll. The Work-sheet method involves manually entering data on work-sheets that are picked up by ADP's courier service, while Teledata requires the client company to convey the payroll information over the telephone. PC Payroll allows a user, working with a PC and modem, to directly input payroll data into ADP's mainframe.

Autopay I payroll service is aimed toward small clients with 8 to 24 employees. Autopay II payroll service focuses on companies with 25 to 500 employees. The Interactive Payroll and Personnel (IPP) service is an on-line processing service offered to companies with more than 500 employees and multiple locations.

b. Company Directions

Since the early 1960s ADP has implemented an active acquisition program to diversify from its primary business of providing payroll services. In 1986 Employer Services accounted for 45% of revenues.

ADP has developed joint payroll marketing relationships with banks. In certain cases ADP acquires the payroll services of the commercial banks.

New products introduced by ADP are PC Personnel and Report Writer.



2. PAYCHEX, INC. (911 Panorama Trail South, Rochester, New York 14625)

a. Products/Services

Paychex provides batch processing services to small and medium-sized businesses nationwide. Paychex markets its services principally to companies employing fewer than 100 people.

In addition to payroll services, Paychex handles related wage returns and tax deposits such as unemployment insurance, earnings history, and reconciliation of tax withheld.

Paychex also provides its customers with a series of specialized publications relating to payroll and tax information. These publications are provided free of charge.

b. Company Directions

Paychex continues to expand and plans to open additional branch operating centers.

In 1986 Paychex began test marketing "fringe benefit" products including life, health, disability, and worker's compensation insurance, and individual retirement accounts. The products are issued by insurance companies with Paychex acting as agent or broker. Paychex (in November 1987) is still evaluating this new venture.

In November 1986, Paychex acquired Payroll General Corporation (Minneapolis, MN), a firm providing payroll services to small businesses in the Minneapolis-St. Paul area.

3. MANAGEMENT SCIENCE AMERICA, INC. (3445 Peachtree Road, North East, Atlanta, Georgia 30326)

a. Products/Services

Management Science America (MSA) develops and markets application software for a variety of cross-industry and vertical markets. Cross-industry market segments include human resources and financial applications. In addition, MSA offers software products for the following vertical markets: manufacturing, health care, higher education, financial institutions, and government.

In the area of human resources MSA's flagship product is its Payroll/Personnel System. In June, this software product won the "Over \$250



million status" award given by ICP Software Directory for having achieved \$250 million in total sales since product introduction.

The Payroll/Personnel System includes a wide range of applications including payroll, personnel, benefits, and employee relations.

- In addition to standard payroll functions, MSA's software provides for flexible earnings, special hours, employee taxes, and regulatory reporting.
- The Benefits Administration module helps administer 401(k), IRA, Employee Retirement Income Security Act (ERISA), flexible benefits, and deferred compensation plans such as profit sharing plans and thrift/savings plans.
- Government compliance - Payroll/Personnel enables regulatory compliance with EEOC, AAP, and OSHA.
- The Compensation Administration module provides for job evaluation, wage and salary structure, budgeting, employee evaluation, and salary and performance review.
- Manpower Planning involves human resource forecasting, turnover analysis, career planning, and skills inventory.
- The Employee Relations module provides for time and attendance, disciplinary actions, grievances, seniority, and labor relations.

Payroll/Personnel System incorporates "expert system" components such as Expert Reporting. The software is functionally integrated with other MSA products including General Ledger, Forecasting and Modeling, and Manufacturing Systems.

ALLTAX provides tax coverage by calculating payroll and withholding taxes for businesses.

b. Company Directions

MSA markets its human resources software products across all industries.

MSA is examining developing HR applications for the minicomputer market segment, particularly the DEC VAX minicomputer.



4. INTEGRAL SYSTEMS (2185 North Carolina Boulevard, Walnut Creek, California 94596)

a. Products/Services

Integral Systems' product offering includes a family of modular, integrated human resource management systems. The products operate on IBM mainframes and also on IBM S/38.

Integral Systems' HRMS provides for Payroll Processing, Benefits Administration, Personnel Management, Applicant Tracking, Position Control, and Report Writers/Query Facilities.

In 1986 Integral Systems introduced the HR-Spectrum series that enables a user to download data from a host computer to a PC, for planning and analysis. HR-Spectrum consists of the following modules: OrgChart, CAAPS (Comprehensive Affirmative Action Planning System), Succession Planner, HR-1, and Compensation Workbench.

b. Company Directions

In April-May 1987, as part of its marketing efforts, Integral Systems organized a series of sales-promotion seminars in 25 major cities in the U.S. and Canada.

In May 1987 the company issued a preliminary prospectus in anticipation of an initial public offering. However, as of November 1987 the sale of shares has been put on hold pending favorable market conditions.

Integral Systems acquired Sysgen in August 1987. Sysgen (Durham, NC) develops software for the IBM System/38. Sysgen is responsible for System/38 software allowing Integral Systems to concentrate on the mainframe market.

New products to be introduced are Flexible Benefits and Pension.

5. INFORMATION SCIENCE INCORPORATED (95 Chestnut Ridge Road, Montvale, New Jersey 07645)

a. Products/Services

Information Science (InSci) markets a series of HRMS software products for mainframes, minicomputers, and microcomputers.

InSciPayroll and InSciPersonnel applications provide for the basic HR functions. An integrated Personnel/Payroll system is also available.

The first part of the report discusses the importance of maintaining accurate records of all transactions. It emphasizes that every receipt and invoice should be properly filed and indexed for easy retrieval. This is particularly crucial for businesses that deal with a large volume of transactions.

In addition, the report highlights the need for regular audits to ensure the integrity of the financial data. Audits should be conducted by independent parties to provide an objective assessment of the company's financial health. This process helps to identify any discrepancies or potential areas of fraud.

Another key aspect discussed is the importance of transparency in financial reporting. Stakeholders, including investors and creditors, rely on accurate and timely information to make informed decisions. Therefore, it is essential to provide clear and concise reports that detail the company's financial performance.

The report also touches upon the role of technology in modern accounting. The use of accounting software and digital tools can significantly streamline the process, reducing the risk of human error and improving efficiency. However, it is important to ensure that these systems are secure and that data is properly backed up.

Finally, the report concludes by stressing the importance of ethical conduct in all financial dealings. Accountants and financial managers have a duty to act in the best interests of their clients and the public. Upholding high ethical standards is essential for maintaining trust and the long-term success of the industry.

InSci's other products include InSciPension Administration System, InSci FlexComp (Flexible Benefits System), and EEOC/Affirmative Action Planner.

As a result of InSci's acquisition of Wang's HRMS division, the company offers software products for Wang VS minicomputers. The products include InSci/VS Payroll/Personnel and InSci/VS FlexComp.

In March 1986, InSci introduced InSciPersonality, a comprehensive HRMS for the IBM PC. InSciPersonality addresses Compensation, Benefits Administration, EEO/AA, COBRA, Applicant Tracking, Career Development, Skills Inventory, Manpower Planning, Training, and Labor Relations.

In addition to software products, InSci offers payroll processing services. This service is offered in the New York metropolitan area.

b. Company Directions

InSci introduced a number of new products in 1987.

- MicroGRS provides the ability to download information from an InSci mainframe system to an IBM PC. MicroGRS integrates with other PC productivity software.
- InSciMicroDuet is a microcomputer software package that enables remote data entry on a PC to update the mainframe system.
- Infobot (Information robotics) enables employees to have direct access to their data on the InSci system from any touch-tone phone.

InSci plans to introduce InSci/VS COBRA, software that provides for COBRA administration and compliance.

InSci is developing DB2, 9370, and PS/2 versions of its human resource software products.

InSci's goal for 1988 is to become the only HRMS vendor to fully implement IBM's SAA (Systems Application Architecture) within its product line.

6. McCORMACK & DODGE CORP. (1225 Worcester Road, Natick, Massachusetts 01760)

a. Products/Services

McCormack & Dodge is a supplier of financial, human resource, and manufacturing applications software.

McCormack & Dodge specializes in human resource management systems for the IBM mainframe environment. The HRMS product line consists of several modules including Payroll, Benefits Administration, Personnel, Safety and Health, Position Control, and Applicant Flow.

b. Company Directions

The company intends to focus on a few vertical markets such as healthcare, banking, and insurance.

A new product under consideration by McCormack & Dodge is a PC version of its HRMS.

7. COMSHARE, INC. (3001 South State Street, Ann Arbor, Michigan 48104)

a. Products/Services

Comshare offers software products in three areas: human resources management (Profiles), decision support (System W DSS), and executive information systems (Commander EIS).

Comshare develops and markets Profiles/3000 for the HP 3000 minicomputer and Profiles/PC for the IBM PC. Comshare is the leading vendor in the microcomputer market segment.

Profiles/3000 handles general administration, employee benefits, attendance, EEO/OSHA, and applicant tracking.

Profiles/PC Employee Record-keeping covers employee information (current and historical), salary, employee demographics, absenteeism, and COBRA compliance.

Profiles/PC Applicant Tracking system handles applicant demographics, candidate search, EEO compliance, and management reporting.

Profiles/PC Job Evaluation provides for job title, job group, union status, and EEO category.

b. Company Directions

In November 1987 Comshare introduced a new product, Profiles/PC Plus, software that transforms an employee record-keeping system into a management reporting system. Profiles/PC Plus also enables the easy creation of standard and custom reports for use by management.



A new product that Comshare plans to introduce in the second quarter of 1988 is a payroll interface software product. This product will enable Profiles users to interface with payroll applications provided by vendors such as ADP, Paychex, Bank of America, and Control Data.

8. MAINFRAME MICROS, INC. (1180 Avenue of the Americas, New York, New York 10036)

a. Products/Services

Mainframe Micros develops HRMS for the IBM PC. The company's flagship product is HR-1 Human Resource Information System.

The products offered under the HR Professional Series include HR-1, HR-Applicant Tracking, HR-Information Link, and HR-Networker.

b. Company Directions

Mainframe Micros acquired Cosmos (Bellevue, WA), developer of Revelation data base. The two companies are now organized under a holding company called Revelation Technologies (New York, NY).

New products under development are HR-Position Control and HR-Flexible Benefits. The company also plans to upgrade HR-1.

Mainframe Micros plans to continue to focus on the microcomputer segment.

9. Other

Tesseract Corp. (San Francisco, CA), a subsidiary of The Prudential Insurance Corp. of America markets human resource management systems for IBM mainframes.

- Tesseract's products include Payroll System, Personnel Management System, Benefit Plan Administration System, and Cafeteria Benefit Administration.
- The company focuses on large corporations (Fortune 100).
- In the payroll services area, several new products are under development that Tesseract hopes to introduce in 1988.
- The company is examining developing a microcomputer-based HRMS.





New Opportunities



Genesys Software Systems, Inc. (Lawrence, MA) specializes in human resource management systems for the IBM mainframe environment.

- Genesys' products include Payroll Accounting, Personnel Administration, Defined Benefits Management, Defined Contribution System, and Human Resource Planning.
- The company has a large presence in banks and insurance industries. Another vertical market Genesys is focusing on is hospitals and healthcare.

Cyborg Systems, Inc. (Chicago, IL) develops HRMS for companies with more than 400 employees.

- Cyborg has developed applications to run on a variety of hardware systems including IBM mainframe, DEC VAX, Unisys, HP 3000, NCR, Data General, and Control Data.
- The software functions are human resource record-keeping, benefits administration, EEO/AA/OSHA, salary administration, time and attendance, applicant tracking, manpower planning, and position control.

Personnel Data Systems, Inc. (Plymouth Meeting, PA) offers mainframe and minicomputer-based software. The company has developed HR applications for IBM mainframe and S/38, DEC VAX, Unisys, HP 3000, Honeywell and Prime. Personnel Data Systems concentrates primarily on minicomputer applications.

Cullinet Software, Inc. (Westwood, MA) markets Human Resource System - Personnel for IBM mainframes. The software provides for job, location, service, performance, and salary history on all employees. The product integrates with Cullinet's Human Resource System - Payroll and IDMS/R.

Spectrum Human Resource System Corp. (Denver, CO) specializes in the microcomputer market. The company's products include HR/2000 and Applicant Management System. The Continued Health Benefits Module integrates with HR/2000 and enables COBRA compliance.



IV

New Opportunities

The human resource market is a growing market and opportunities are aplenty for HR software vendors. Companies outgrow their in-house HR systems as their data processing departments are faced with increasing backlogs of software development.

INPUT estimates that only 30 percent of medium-sized and large organizations have HRMS installed, suggesting a vast potential market.

The opportunities in the mainframe, minicomputer, and microcomputer market segments roughly parallel the growth of these computer hardware systems.

- The strong growth of microcomputers viewed along with the enhanced role of the PC in corporate computing makes this the most promising segment. The microcomputer industry has witnessed a number of significant developments. These include Intel's 80386 microprocessor, IBM's Personal System/2 series of computers, and Microsoft's OS/2 operating system. The much greater performance characteristics of microcomputers made possible by these advances offer new opportunities for vendors developing applications for this market segment.
- Unlike the mainframe market (where IBM is the predominant vendor) the minicomputer marketplace is characterized by many manufacturers with no one company dominating the market. This has inhibited to a certain extent HR vendors from developing applications as it would entail developing and porting software for different systems. However, the high growth of minicomputers and departmental systems in recent years will propel HR vendors to take a closer look at this market segment.

A new opportunity for HRMS vendors lies in turnkey systems using workstations. An example (in another area) is Sun Microsystems (Mountain View, CA). Sun, manufacturer of engineering workstations, has developed a financial system for investment banking firms.



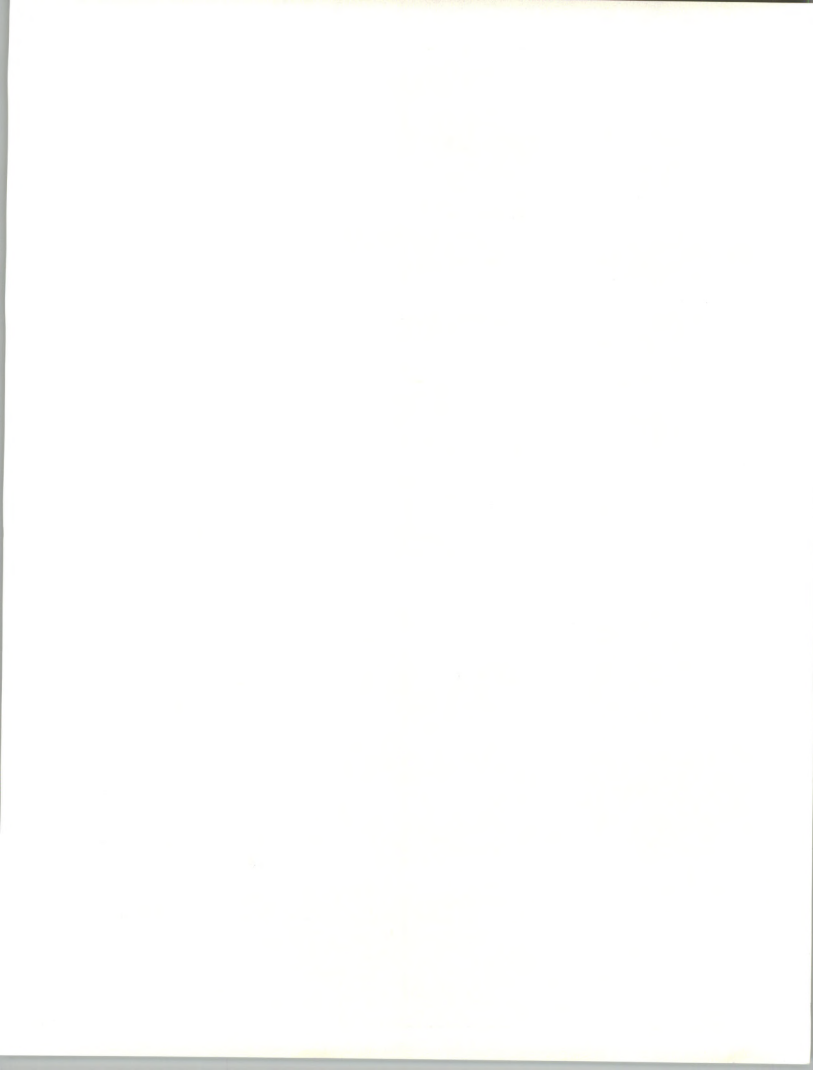
Since the human resources sector consists of two segments, service companies and software companies, new opportunities for each segment are products and services traditionally offered by the other group.





Conclusions and Recommendations







Conclusions and Recommendations

Many companies continue to develop human resource applications in-house, often at great cost. Hence educating and convincing the user on the benefits of using a commercial product is of importance to HRMS vendors.

As the control and administration of human resource management systems moves from the hands of data processing to the human resources department, it becomes imperative for HR software vendors to design human resource systems from a HR rather than a DP perspective.

The most promising products and services will be those that fully exploit technology advances in the areas of relational data base technology, distributed data processing, networking, and expert systems.

Human resource management systems of the future will reflect developments in artificial intelligence (AI) and fourth generation languages (4GL). HRMS will be easy to learn and easy to use, will have English language front-ends, and will allow users to define and build their own systems including menus, inquiry screens, and custom reports.

Many companies use HR products from more than one vendor suggesting that they are not able to meet all their requirements from one company. Looking into the future (Exhibit V-1), INPUT foresees the eventual integration of the payroll and personnel/human resource functions. Both the service companies and the software companies will offer a complete range of products and services by moving into the other's territory. To achieve this, strategic vendors can use include new product development, strategic alliances and joint ventures, and mergers and acquisitions.

Adequate capitalization and a strong marketing presence are crucial to the success of companies offering microcomputer-based HRMS. Also, vendors should offer bundled services similar to those offered by main-frame vendors. This includes software upgrades, training, service and

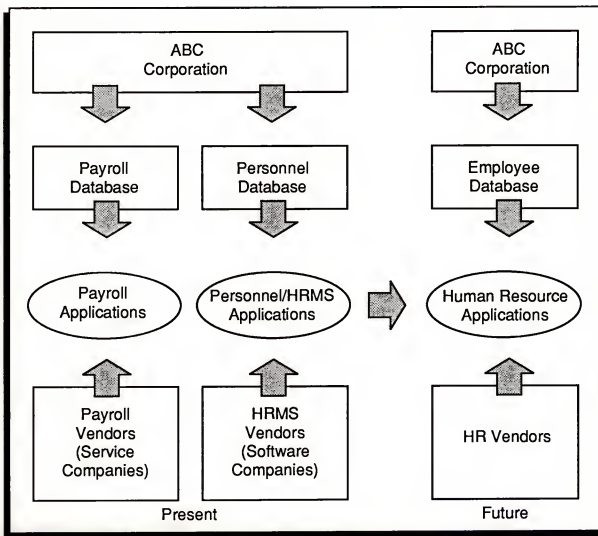


maintenance, and hot-line telephone support. However this is easier said than done since the low price of microcomputer software makes this difficult to achieve.

Although human resources is a cross-industry application, vendors may consider focusing on vertical markets like healthcare and banking as some of them have already done.

EXHIBIT V-1

HUMAN RESOURCES - PRESENT VERSUS FUTURE







Appendix: Forecast Data
Base: Human Resources
Sector



**HR-A**

Appendix: Forecast Data Base: Human Resources Sector

- This appendix contains the following forecast information, as shown in Exhibit HR-A.
- Market size by delivery mode for each year, 1986-92
- Market growth rates for 1986-87
- Average annual growth rate (AAGR) for each delivery mode for the five-year period 1987-92.



EXHIBIT HR-A-1

**HUMAN RESOURCES SECTOR
CROSS-INDUSTRY
USER EXPENDITURES FORECASTS, 1987-1992**

SEGMENTATION BY DELIVERY MODE	1986 (\$M)	1986- 1987 Growth	1987 (\$M)	1988 (\$M)	1989 (\$M)	1990 (\$M)	1991 (\$M)	1992 (\$M)	AAGR 1987- 1992 (Percent)
Remote Computing/ Batch	932	14	1,061	1,221	1,386	1,552	1,746	1,934	13
Application Software									
Mainframe/Mini	485	20	582	673	732	764	778	783	6
Micro	37	24	46	57	67	84	100	115	20
Total Application Software	522	20	628	730	799	848	878	898	7
Turnkey Systems	217	8	235	251	267	280	291	300	5
Cross-Industry Total	1,671	15	1,924	2,202	2,452	2,680	2,915	3,132	10



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