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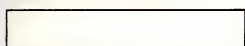
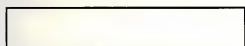
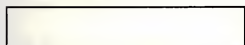
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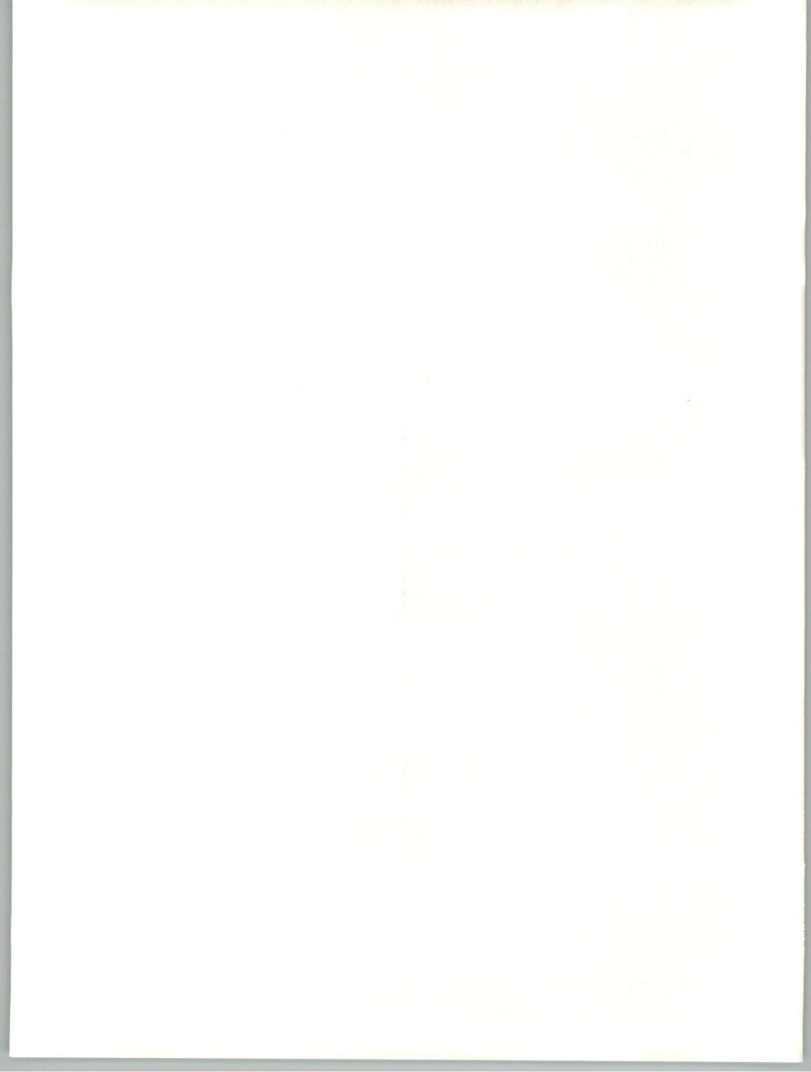
Market  
Analysis and  
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Services  
(MAPS)



**U.S. Information  
Services  
Industry-Specific  
Markets  
1987-1992**

Transportation  
Sector

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DECEMBER 1987

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U.S. INFORMATION SERVICES  
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MARKETS, 1987-1992

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**Market Analysis and Planning Services  
(MAPS)**

*U.S. Information Services Industry-Specific  
Markets, 1987-1992—  
Transportation*

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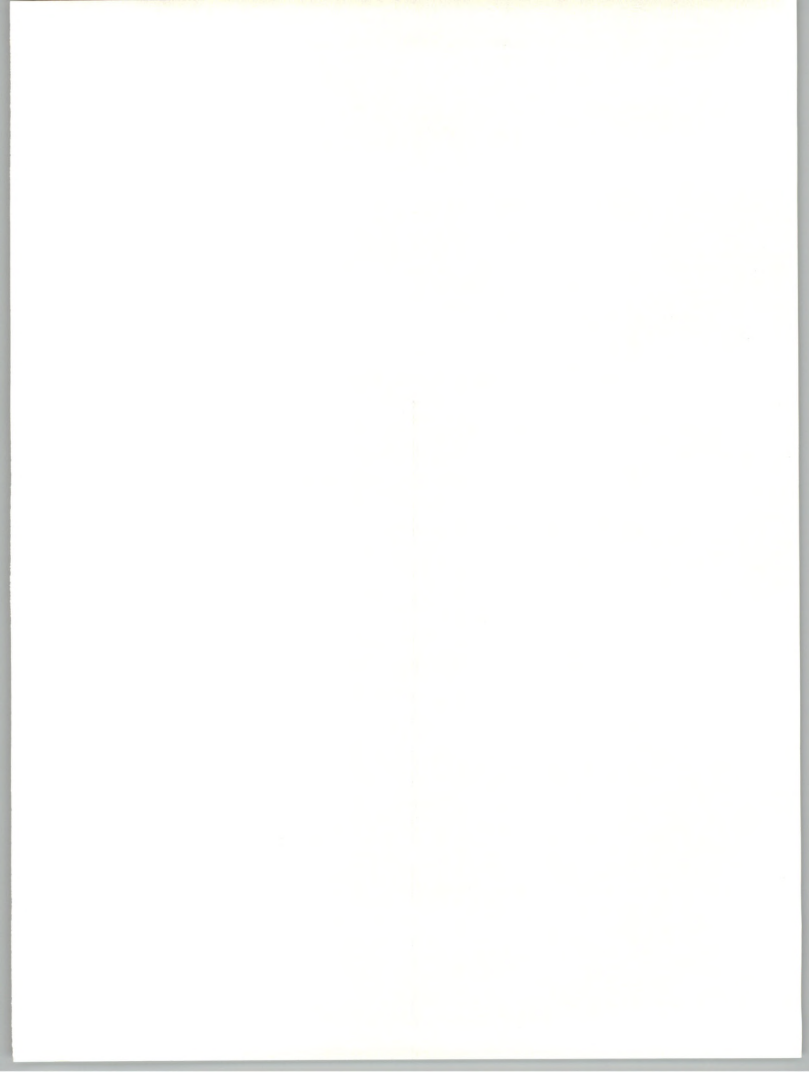
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## Issues, Trends, and Events





## I

## Issues, Trends, and Events

**A****Introduction**

The transportation industry sector comprises the airline, railroad, trucking, and other transportation segments. Deregulation and economic conditions have contributed to increased competition and consolidation within each of the segments, as well as competition between the modes of transportation and the development of intermodal transportation offerings.

Cost containment, increased productivity and efficiency of operations, as well as improved services offered to customers all rank high as factors in achieving profitability and competing effectively in the deregulated environment.

**B****Airlines**

The U.S. airline industry is highly concentrated, with twelve major carriers accounting for 84% of all revenue passenger miles at the end of 1986. Sixteen smaller national carriers accounted for about 12%, and regionals, or commuters, accounted for the remaining 4%. Prevalent since 1985, merger and acquisition activities are expected to continue into the near future.

U.S. airlines performed well in 1986, despite a less favorable first half. Although operating profits for 1986 were below 1984 and 1985 levels, the industry was profitable for the fourth year in a row.

While passenger traffic increased, so did airfare discounting. Not only did discounting become more widespread in 1986, but the discounts became larger. The industry continued to benefit from lower fuel prices and, in some cases, lower labor costs. However, these post-deregulation airlines are struggling to restrain costs further, in order to remain both competitive and profitable.



**C****Railroads**

In recent years, a restructuring of the freight railroad industry has occurred. The end result has been fewer and larger railroads and more intermodal companies. In 1986, the nation's seven largest railroads accounted for 75% of U.S. rail line miles and over 80% of revenues and ton-miles. Intermodal companies have evolved through acquisitions and through cooperative efforts with carriers in other modes, such as trucking and barge operations.

For the year 1986, rail revenue ton-miles were approximately equal to 1985 levels due to improved industrial production in the fourth quarter and the replenishment of coal inventories at electric power plants. During most of the year, however, operating revenues were below 1985 levels due to fuel cost savings being passed on to customers and increased competition from other modes of transportation.

One area of the rail industry—rail piggyback traffic, also known as trailer-on flatcar (TOFC) and container-on flatcar (COFC)—has grown dramatically since deregulation in 1981. These operations require specially designed cars that permit stacking containers two high, doubling the loading capacity of the train, and only slightly increasing costs. Companies that operate ocean liners, with the expertise in operations and marketing required to achieve economies of scale in these type of operations, have teamed up with piggyback rail companies, either through acquisitions or partnerships, forming intermodal operations. Because most of this business involves imported goods traveling west to east, these companies offer reduced rates to ship from east to west, often lower than TOFC and trucking rates.

**D****Trucking**

Financial pressures have increased for trucking firms operating in the highly competitive deregulated environment. While fuel costs have decreased, labor costs and insurance premiums have increased. The more progressive trucking companies have been able to offset the effects of intense price/service competition by implementing successful marketing strategies and improving efficiencies in operations. Marginal carriers, on the other hand, have been marked by failures, bankruptcies, reorganizations, acquisitions, and mergers.

Growth in less-than-truckload (LTL) business has come from the extension of established LTL carrier systems and through mergers and acquisitions. Growth in LTL business has been accompanied by LTL rate increases and rate discounting by truckload (TL) operations, reflecting shifts in demand for each type of service.

Delivery services on shipments by single-mode truck or intermodal air and truck operations have become very competitive and reliable. The fast-growing air cargo and air express markets have increased competition among surface carriers and intermodal surface and air carrier operations in meeting just-in-time inventory and other requirements.



**E****Other Transportation**

Other transportation industry segments include air cargo, water transportation, mass transit, postal service, pipelines, and transportation services.

The air cargo industry segment is showing signs of a shakeout similar to that experienced by the passenger airlines since deregulation. Of the largest U.S. air freight carriers, only three or four are expected to survive the next few years.

Future growth in the domestic water transportation industry segment is tied closely to domestic economic conditions. U.S. flagged foreign trade lines are dependent on domestic and international economic conditions and foreign trade.

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial data. This includes not only sales and purchases but also expenses and income from various sources.

The second section focuses on the classification of these transactions. It provides a detailed breakdown of how different types of expenses should be categorized, such as operating expenses, capital expenditures, and non-recurring items. This classification is crucial for preparing accurate financial statements and for tax reporting purposes.

The third part of the document addresses the issue of reconciling the books. It explains the process of comparing the internal records with external statements, such as bank statements and supplier invoices, to identify and correct any discrepancies. Regular reconciliation is essential to prevent errors from accumulating and to ensure that the books are balanced at all times.

Finally, the document concludes with a summary of the key principles of bookkeeping. It reiterates the importance of consistency, accuracy, and transparency in all financial reporting. It also provides some practical tips for organizing the books and for maintaining them over the long term.





the 1990s, the number of people with a mental health problem has increased in the UK (Mental Health Act 1983, 1990).

There is a growing awareness of the need to improve the lives of people with mental health problems. The UK Government has set out a strategy for mental health care in the 1990s (Department of Health 1990). The strategy is based on the following principles:

1. The promotion of the mental health of the population as a whole.
2. The provision of services to meet the needs of people with mental health problems.
3. The promotion of the independence and self-reliance of people with mental health problems.

The strategy also states that the following objectives should be achieved:

1. To reduce the incidence of mental health problems.
2. To reduce the severity of mental health problems.
3. To reduce the duration of mental health problems.
4. To reduce the cost of mental health care.

The strategy also states that the following objectives should be achieved:

1. To improve the quality of life of people with mental health problems.
2. To improve the quality of care for people with mental health problems.
3. To improve the quality of the services provided to people with mental health problems.

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## Market Forecasts



the 1990s, the number of people in the world who are under 15 years of age is expected to increase from 1.1 billion to 1.5 billion (United Nations 1998). This increase is expected to be particularly rapid in the developing countries, where the population is expected to increase from 1.1 billion to 1.8 billion in the same period.

There are a number of reasons why the population of the world is expected to increase so rapidly. One of the main reasons is that the number of children in the world is increasing. In 1990, there were 1.1 billion children under 15 years of age in the world. By 2000, this number is expected to have increased to 1.5 billion. This increase is expected to be particularly rapid in the developing countries, where the population is expected to increase from 1.1 billion to 1.8 billion in the same period.

Another reason why the population of the world is expected to increase so rapidly is that the number of people in the world who are aged 15 years and over is also increasing. In 1990, there were 4.1 billion people aged 15 years and over in the world. By 2000, this number is expected to have increased to 4.5 billion. This increase is expected to be particularly rapid in the developing countries, where the population is expected to increase from 4.1 billion to 4.8 billion in the same period.

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## II

## Market Forecasts

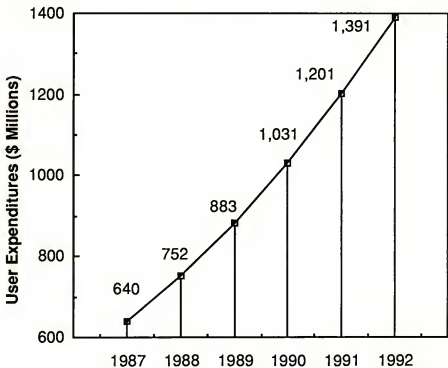
## A

## Introduction

Demand for transportation industry-specific information services will grow 17% annually through 1992, increasing from \$547 million in 1986 to approximately \$1.4 billion in 1992. For details, see Exhibits II-1 through II-3 and Appendix Exhibit TR-A-1.

## EXHIBIT II-1

**TRANSPORTATION SECTOR  
INDUSTRY-SPECIFIC USER EXPENDITURES  
1987-1992**



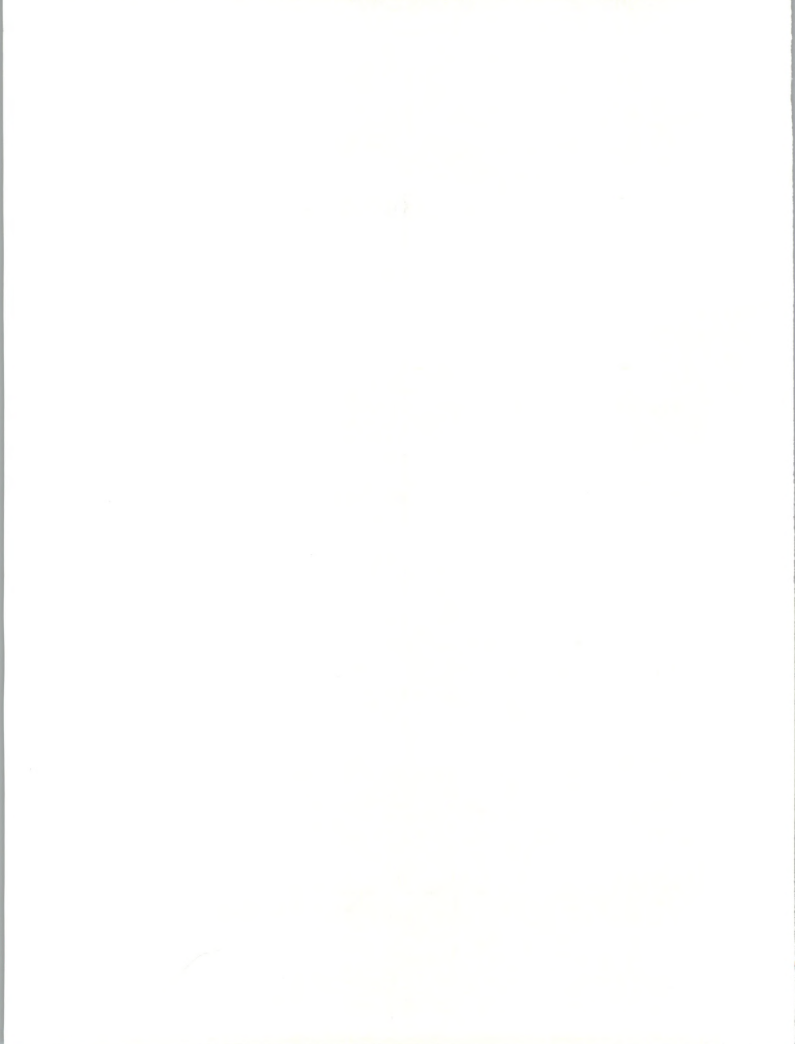
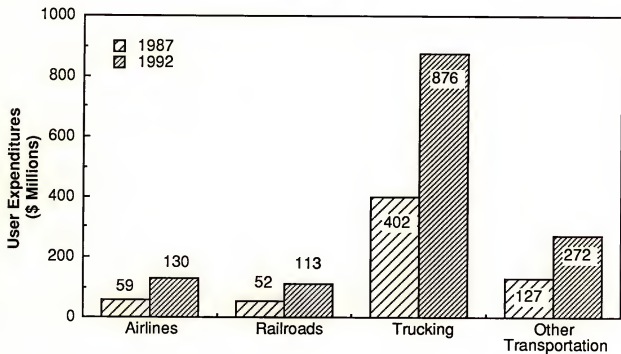


EXHIBIT II-2

**TRANSPORTATION SECTOR MARKET FORECAST COMPARISON  
INDUSTRY-SPECIFIC INFORMATION SERVICES  
1987-1992**

Transportation user expenditures for information services will increase at an average annual growth rate higher than revenue growth rates expected during the next five years for the following reasons:

- Information services make a significant contribution toward improving efficiency, containing costs, and thereby increasing profitability, as well as allowing companies to offer additional services to their customers.
- Transportation companies recognize the importance of information systems and new technology and are increasing their investments in these areas.

Appendix TR contains the forecast data base for each year from 1986 to 1992 for the transportation sector as well as for the airline, railroad, trucking, and other transportation segments.

the 1990s, the number of people with a mental health problem has increased in the UK (Mental Health Act 1983, 1990).

There is a growing awareness of the need to improve the lives of people with mental health problems. The Department of Health (1999) has set out a strategy for mental health care in the UK, which includes the following aims:

- (i) to improve the lives of people with mental health problems;
- (ii) to reduce the need for hospital care;
- (iii) to improve the effectiveness of mental health services;
- (iv) to improve the training and professional development of mental health workers.

There is a growing emphasis on the need to improve the lives of people with mental health problems. This is reflected in the following aims:

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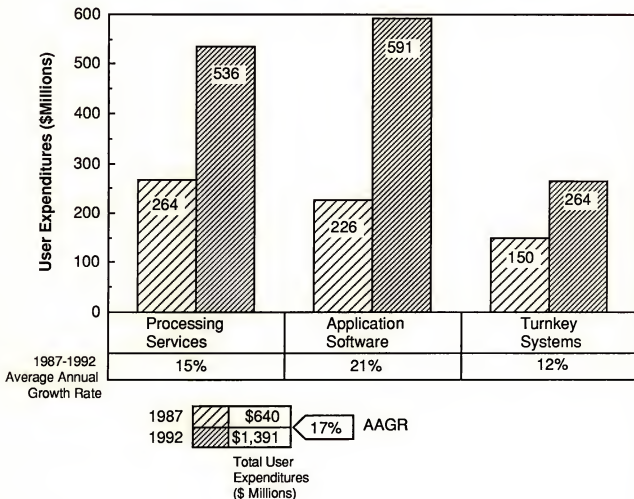
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EXHIBIT II-3

**TRANSPORTATION SECTOR INDUSTRY-SPECIFIC  
USER EXPENDITURES FORECAST BY DELIVERY MODE  
1987-1992**



the 1990s, the number of people in the UK who are aged 65 and over has increased from 10.5 million to 13.5 million, and the number of people aged 75 and over has increased from 4.5 million to 6.5 million (Office for National Statistics 2000).

There is a growing awareness of the need to address the needs of older people, and the UK Government has set out a strategy for the 21st century in the White Paper on *Ageing Better: Our Future, Our Choice* (Department of Health 2000). This strategy is based on the principle that older people should be able to live independently, and to be able to contribute to society. It is based on the principle that older people should be able to live independently, and to be able to contribute to society.

The White Paper sets out a number of key objectives for the 21st century, including: to ensure that older people are able to live independently; to ensure that older people are able to contribute to society; to ensure that older people are able to live in their own homes; to ensure that older people are able to live in their own homes; to ensure that older people are able to live in their own homes; to ensure that older people are able to live in their own homes.

The White Paper also sets out a number of key objectives for the 21st century, including: to ensure that older people are able to live independently; to ensure that older people are able to contribute to society; to ensure that older people are able to live in their own homes; to ensure that older people are able to live in their own homes; to ensure that older people are able to live in their own homes; to ensure that older people are able to live in their own homes.

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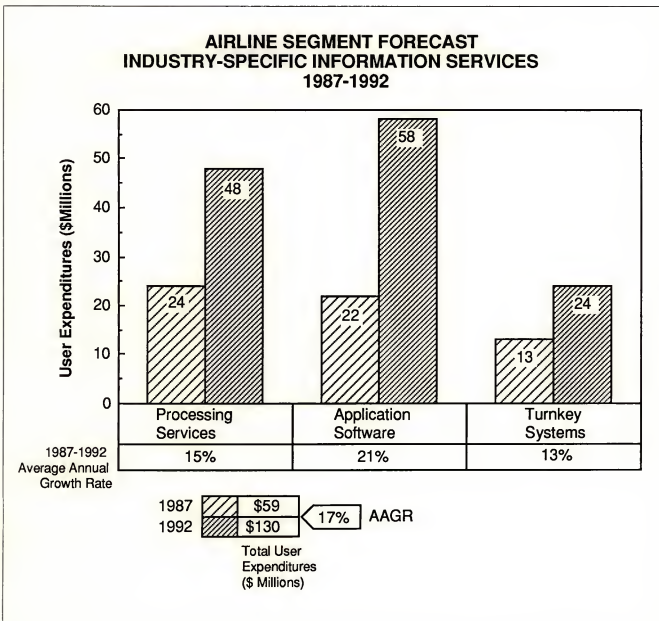
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**B****Airlines**

User expenditures for information services by the airlines will grow 17% annually through 1992, with 1992 expenditures totalling \$130 million (see Exhibits II-4 and Appendix TR-A-2).

EXHIBIT II-4





- Expenditures for processing services by the airline segment will grow at an average annual growth rate of 15% over the next five years, reaching \$48 million by 1992.
- Application software product expenditures are forecasted to reach \$58 million in 1992, growing at an average rate of 21% annually.
- Turnkey systems expenditures will grow to \$24 million in 1992, at an average annual growth rate of 13%.

The level of spending for the airline segment will increase over the next five years for the following reasons:

- Airlines will purchase software and other computer services in order to improve profitability by increasing productivity and decreasing labor and other costs.
- Competition will compel the airlines to not only contain costs, but to increase the level of services to customers.
- Information services provide the required data communications between various locations required by this segment.

User expenditures are less for the airline segment than for the trucking and other transportation segments due to the following:

- There are fewer airlines than trucking companies or companies in the other transportation segments.
- Computer services developed by airlines for their own use are not included in INPUT's market size estimates and forecasts.
- Parent organizations often share internally developed systems with subsidiaries and those companies they acquire.

Reservation systems are the systems most prevalent in the airline segment. Financial reporting systems are also ranked high in importance by the segment because of the need for cost measurement and control.

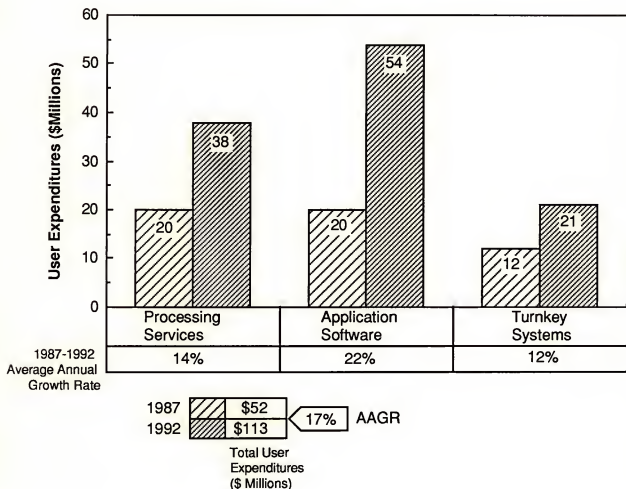
Airlines also use systems for maintenance management, crew scheduling, statistical and revenue reporting, aircraft and mission reporting, and ticket auditing.



**C**  
**Railroads** User expenditures for information services in the railroads will grow 17% annually through 1992, with 1992 expenditures totalling \$113 million (see Exhibits II-5 and Appendix Exhibit TR-A-3).

EXHIBIT II-5

**RAILROAD SEGMENT FORECAST  
 INDUSTRY-SPECIFIC INFORMATION SERVICES  
 1987-1992**







- Expenditures for processing services by the railroad segment will grow at an average annual growth rate of 14% over the next five years, reaching \$52 million by 1992.
- Application software product expenditures are forecasted to reach \$54 million in 1992, growing at an average rate of 22%.
- Turnkey systems expenditures will grow to \$21 million in 1992, at an average annual growth rate of 12%.

Railroad segment spending for information services will increase over the next five years due to the following:

- New opportunities, such as intermodal transportation, are opening up to the railroads that will allow them to provide additional services to their customers and require increased use of information services.
- Cost containment, efficiency, and profitability are also important to this segment.

User expenditures for information services are less for the railroad segment than for any of the other transportation segments.

- There are fewer railroads than companies in other segments.
- Like the large companies in the airline, trucking, and other transportation segments, railroads have developed computer services for their own internal use, which are not included in user expenditure forecasts.
- In addition, substantial consolidation within the segment has involved a sharing of internally developed resources.

Information systems used by railroads include automated reservation, railcar tracking and management, mileage credit auditing, and other systems.

the most common. The most common of these is the 'one-to-one' model, in which the number of staff is equal to the number of children. This model is based on the idea that each child needs a dedicated staff member to provide them with the attention and support they need. This model is often used in residential care settings, where children are living with staff 24 hours a day.

Another common model is the 'one-to-two' model, in which one staff member is responsible for two children. This model is often used in day care settings, where children are only in the care of staff during the day. The 'one-to-two' model is based on the idea that children can benefit from having a dedicated staff member, but that they do not need a dedicated staff member 24 hours a day.

There are a number of factors that can influence the choice of a care model. These factors include the age of the children, the nature of the children's needs, the resources available, and the preferences of the children and their families. For example, a child with a severe mental health problem may need a one-to-one model, while a child with a mild mental health problem may be able to thrive in a one-to-two model.

It is important to note that the choice of a care model is not a simple one. It is a complex decision that requires careful consideration of all the factors mentioned above. In addition, it is important to remember that the care model is not the only factor that determines the quality of care. Other factors, such as the training and experience of the staff, the physical environment, and the overall ethos of the care setting, are also important.

In conclusion, the choice of a care model is a complex one that requires careful consideration of all the factors mentioned above. It is important to remember that the care model is not the only factor that determines the quality of care. Other factors, such as the training and experience of the staff, the physical environment, and the overall ethos of the care setting, are also important. The goal is to provide the best possible care for each child, and the choice of a care model is a key part of achieving this goal.

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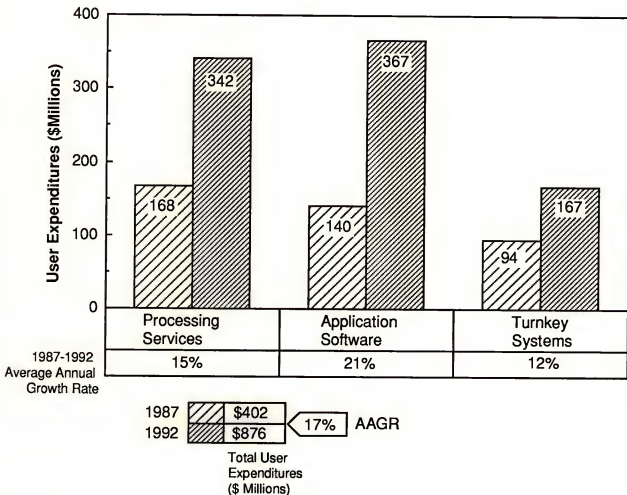
## D

## Trucking

User expenditures for information services in the trucking industry segment are expected to grow at an average rate of 17% for the next five years, reaching \$876 million by 1992 (see Exhibits II-6 and Appendix Exhibit TR-A-4).

EXHIBIT II-6

**TRUCKING SEGMENT FORECAST  
INDUSTRY-SPECIFIC INFORMATION SERVICES  
1987 - 1992**



the 1990s, the number of people with a mental health problem has increased in the UK, and the number of people with a mental health problem who are in contact with mental health services has also increased (Mental Health Act 1983, 1990, 1994, 1997, 2003).

There is a growing awareness of the need to improve the lives of people with a mental health problem, and to reduce the stigma and discrimination that they experience. This has led to a number of initiatives, including the development of mental health services, the establishment of mental health charities, and the development of mental health legislation (Mental Health Act 1983, 1990, 1994, 1997, 2003).

The aim of this paper is to describe the development of a mental health service in the UK, and to discuss the challenges that have been faced in the process. The paper is divided into three sections: a description of the service, a discussion of the challenges, and a conclusion.

The service was developed in response to the need for a mental health service in the UK. The service was developed in the 1990s, and has since then grown to become one of the largest mental health services in the UK. The service provides a range of services, including assessment, diagnosis, treatment, and rehabilitation.

The challenges that have been faced in the development of the service include the need to raise awareness of mental health problems, the need to reduce the stigma and discrimination that people with a mental health problem experience, and the need to improve the quality of mental health services.

The service has been successful in addressing these challenges, and has become a leading mental health service in the UK. The service has been successful in raising awareness of mental health problems, in reducing the stigma and discrimination that people with a mental health problem experience, and in improving the quality of mental health services.

The service has also been successful in addressing the need for a mental health service in the UK. The service has been successful in providing a range of services, including assessment, diagnosis, treatment, and rehabilitation. The service has also been successful in providing a range of support services, including housing, employment, and education.

The service has been successful in addressing the need for a mental health service in the UK, and has become a leading mental health service in the UK. The service has been successful in providing a range of services, including assessment, diagnosis, treatment, and rehabilitation. The service has also been successful in providing a range of support services, including housing, employment, and education.

- User expenditures for processing services in this segment will grow at an average rate of 15%; trucking companies are expected to spend \$342 million for processing services in 1992.
- Application software expenditures will grow 21% and reach \$367 million in 1992.
- Turnkey systems, growing at an average rate of 12% per year, will grow to \$167 million in 1992.

Expenditures for information services by the trucking industry segment represent the largest portion of information services expenditures for the transportation industry for the following reasons:

- Due to easy entrance into trucking and the diverse nature of the business, there are more companies in the trucking segment than in any other transportation segment, even though some consolidation is occurring within the segment.
- Success in trucking lies in developing market niches, which require specialized computer services. Additionally, because the average trucking company is smaller than other types of transportation companies, information services are more often purchased from outside vendors than developed internally.
- In the trucking industry segment, there are innumerable points of transaction, making communications needs even greater for the trucking segment than for other segments.
- Many intermodal forms of transportation involve trucking in some way. The coordination of the different modes requires sophisticated information services.

Some of the many information systems used by the trucking segment are outlined below:

- Freight rate data base and automatic rating system
- On-line system that audits and analyzes freight bills and prevents duplicate payments
- Truck routing and mileage system
- Fuel and mileage reporting system
- Fuel tax and mileage system



- Integrated system for vehicle maintenance, parts inventory, preventive maintenance, scheduling, mechanic statistics, repair orders, and fuel and mileage reporting
- Vehicle routing system that reduces fuel cost by determining the optimum route for the movement of products from shipping points to customer locations
- Integrated system for rating, payroll, freight billing, accounts payable, accounts receivable, shipper and sales analysis reporting, financial statements, trip and mileage reporting, vehicle maintenance, driver settlements, dispatching, and inventory control
- System to calculate haulage booking, accounting, and profitability
- Union contract payroll system
- Driver log system that checks driver violations and missing logs
- On-line system designed for LTL freight companies

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**E****Other Transportation**

User expenditures for the other transportation segments are expected to grow from \$127 million in 1987 to \$272 million in 1992, at an average annual rate of 16% (see Exhibit II-7 and Appendix Exhibit TR-A-5).

- Processing services expenditures by the other transportation segments are forecasted to grow at an average of 15% per year to reach \$108 million in 1992.
- Expenditures for applications will total \$112 million in 1992, growing at an average annual rate of 21%.
- Turnkey systems expenditures will reach \$52 million, growing at an average of 12% per year.

Applications used by other transportation segments include the following:

- Air cargo reservation and invoicing system
- Water transportation cargo booking system
- Container survey reporting system
- Water transport fleet scheduling system
- Marine personnel, payroll, and planning system

the 1990s, the number of people in the world who are illiterate has increased from 400 million to 600 million.

It is not surprising that the illiterate population has increased in the last decade. The reason is that the population of the world has increased by 1.5 billion people in the last decade.

There are many reasons for the increase in illiteracy. One of the main reasons is that the population of the world has increased by 1.5 billion people in the last decade.

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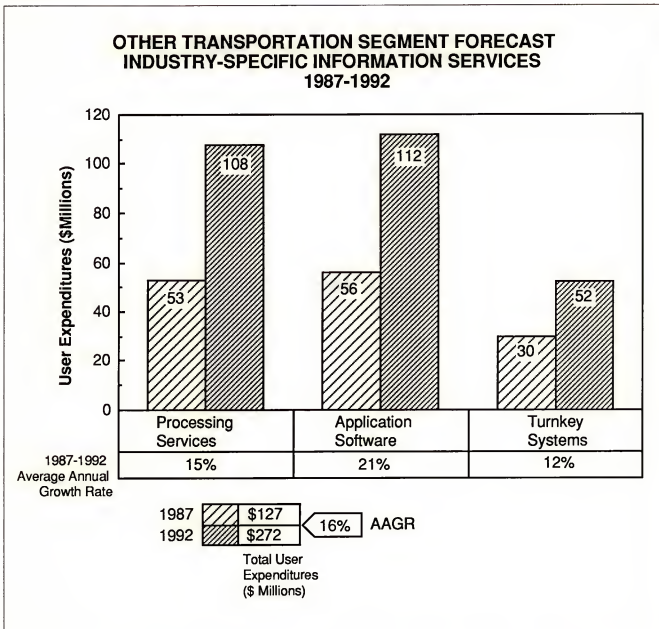
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EXHIBIT II-7



- Ocean freight cost system
- Terminal control system for operation and control of ocean shipping terminals
- Vessel performance reporting system
- Ferry/cruise reservation and passenger documentation system



- Graphic design program for public transit systems
- Automated transit data-retrieval and route-selection system
- Transit management system for scheduling vehicle maintenance and providing revenue and safety analysis for public and private bus lines or fleet operations
- Computer-assisted packaging evaluation system
- Common carrier service-dependability index
- Real-time freight forwarding system incorporating full export/import procedures, unit load, air freight, and customs procedures
- Management control of large or small vehicle fleets
- Tariff management and freight bill processing
- Traffic rate and routing system for all modes of transportation.

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**F****Processing Services**

User expenditures for remote computing and batch processing services will grow at an average annual growth rate of 16% over the next five years for the transportation industry sector, reaching \$506 million in 1992 (see Exhibit II-8 and Appendix Exhibit TR-A-1).

In terms of revenue generated from processing services for the transportation sector, the leader is funds transfer services provided to truckers in transit.

Airline reservation systems, typically provided by the airlines, are also widely used processing services in the transportation industry sector.

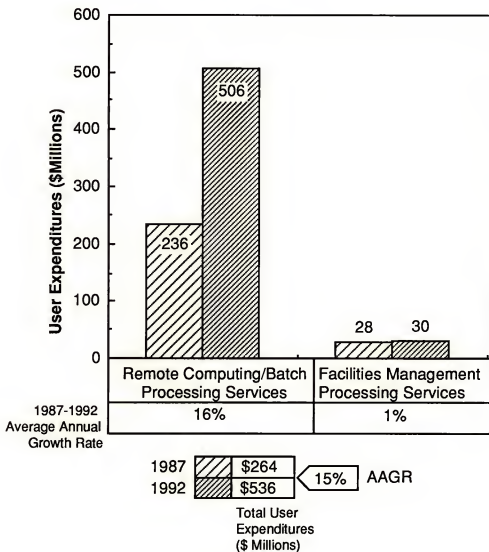
User expenditures for facilities management processing services will grow at only 1% annually over the next five years.

As transportation companies become more sophisticated computer users, processing will increasingly be handled in-house. Facilities management services provided by outside vendors will be required only to a limited extent.



EXHIBIT II-8

### TRANSPORTATION SEGMENT FORECAST INDUSTRY-SPECIFIC PROCESSING SERVICES 1987-1992



in the 1970s, and in the 1980s and 1990s, the number of people in the labour force has increased steadily.

The growth of the labour force has been driven by a combination of factors, including population growth, improvements in education and health care, and the expansion of the service sector. The growth of the labour force has also been driven by the migration of people from rural areas to urban areas, and from developing countries to developed countries.

The growth of the labour force has had a significant impact on the economy. It has led to an increase in the number of people who are employed, and to a decrease in the unemployment rate. It has also led to an increase in the demand for goods and services, which has led to an increase in the production of goods and services.

The growth of the labour force has also led to an increase in the demand for skills and training. This has led to an increase in the number of people who are enrolled in educational institutions, and to an increase in the number of people who are employed in high-skill occupations.

The growth of the labour force has also led to an increase in the demand for social services. This has led to an increase in the number of people who are employed in the social service sector, and to an increase in the number of people who are receiving social services.

The growth of the labour force has also led to an increase in the demand for housing. This has led to an increase in the number of people who are employed in the construction industry, and to an increase in the number of people who are living in new housing units.

The growth of the labour force has also led to an increase in the demand for transportation. This has led to an increase in the number of people who are employed in the transportation industry, and to an increase in the number of people who are using public transportation.

The growth of the labour force has also led to an increase in the demand for health care. This has led to an increase in the number of people who are employed in the health care industry, and to an increase in the number of people who are receiving health care.

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**G****Applications Software**

The applications software market for the transportation sector will grow from \$226 million in 1987 to \$591 million in 1992, at an average annual growth rate of 21% (see Exhibit II-9 and Appendix Exhibit TR-A-1).

User expenditures by the sector for microcomputer applications will increase at an average rate of 23% over the next five years from the relatively small base of \$53 million in 1987 to \$149 million in 1992.

Expenditures by transportation companies for mainframe and minicomputer applications software will increase from \$173 million in 1987 to \$442 million in 1992, growing an average of 21% annually.

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**H****Turnkey Systems**

User expenditures from the transportation sector for turnkey systems will grow at an average annual rate of 12% from 1987 to 1992 (see Exhibit II-3 and Appendix Exhibit TR-A-1).

The following types of applications are available to transportation companies as turnkey systems:

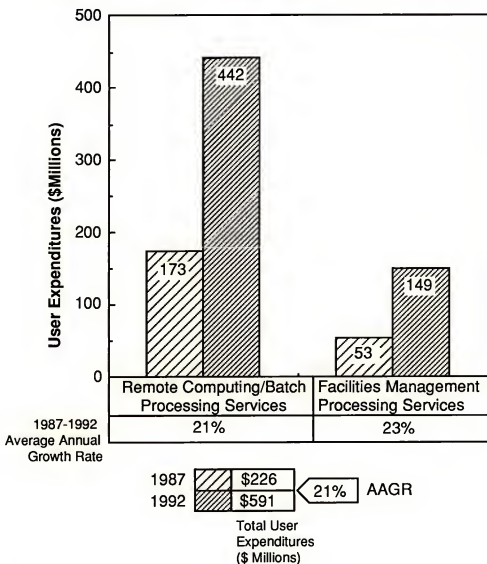
- Aircraft maintenance and rotatables system
- Airline reservation system
- Fleet management system
- Driver data system
- Liquid inventory system
- LTL transportation system
- Vehicle maintenance and efficiency system

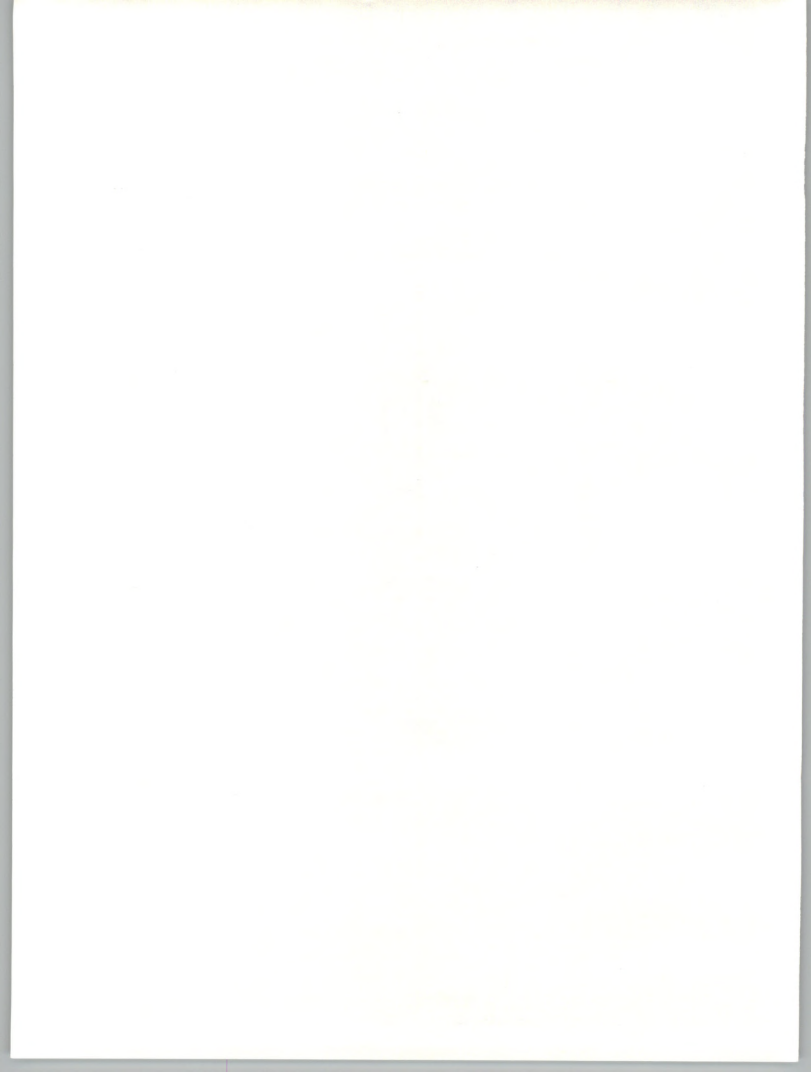




EXHIBIT II-9

### TRANSPORTATION SEGMENT FORECAST INDUSTRY-SPECIFIC APPLICATIONS SOFTWARE 1987-1992











## Competitive Developments







## Competitive Developments

### A

#### Introduction

The transportation sector is characterized by relatively few large processing services vendors and a widely diversified group of applications software and turnkey systems vendors. This diverse group includes hundreds of small companies providing computer services to transportation and other industries as well as larger companies with only a very small portion of their revenues generated from industry-specific products sold to the transportation industry.

Overlap exists between the industry-specific applications used by transportation companies and companies in other industries involving distribution, such as manufacturing, wholesale and retail distribution. Fleet management systems and vehicle maintenance systems are used by many types of companies. In addition, overlap exists between the systems used by the various transportation segments.

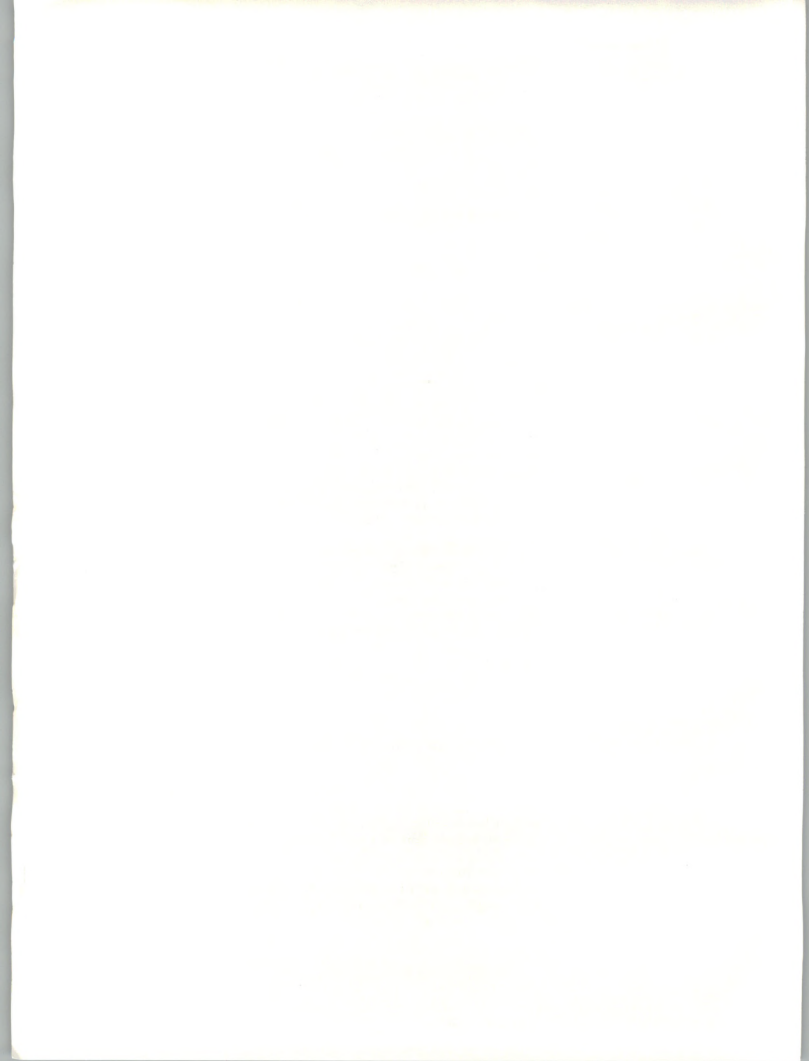
Many airlines, railroads, trucking firms, and other transportation companies have developed applications for internal use and are now marketing these products externally.

### B

#### Vendor Profiles

##### 1. Comdata Network, Inc. (2209 Crestmoor Road, Nashville, TN 37215)

Comdata Network, Inc. provides funds transfer services to the trucking industry and offers check verification processing services for retail establishments. Comdata's processing services for the transportation industry include Comchek and Express Comchek Funds Transfer Services, Fuel Purchase Program, Permit Transfer Program, and COMVOY Shipment Interchange Program. Funds transfer services are provided to individual credit card holders through Comdata Service Centers located at truck stops, gambling casinos, motels, hotels, and college campuses.





## **2. Cass Information Systems (1015 Locust Street, St. Louis, MO 63101)**

Cass Information Systems provides the following applications to the transportation industry via processing services utilizing a Tandem NON-STOP TXP computer:

- Transdata, a reporting system designed to monitor and reduce the cost of inbound and outbound freight
- Transaction, a data base information system used to manage and update historical transportation information
- Freightpay, an accounts-payable system that can handle freight payments and maximize cash flow
- Rate-Chek, a freight-billing auditing system that can be used in preaudit, immediate audit, and postaudit environments
- Translink, a financial control system that matches preauthorized order records of transportation activities with related freight expenditures
- Compu-Rate, a client-based rating system including computer rating, computer auditing, tariff maintenance, rate quotation, prepay and add invoicing, and shipment planning

## **3. FundsNet, Inc. (385 Nordhoff Place, Englewood, NJ 07631)**

FundsNet, Inc. provides electronic funds processing and transfer services to the transportation industry and the consumer public and provides credit card processing services to retail establishments and the travel and entertainment industry.

- Dial-a-Check offers trucking companies a method of transferring funds to their drivers while enroute.
- Action Check, an enhancement to Dial-a-Check, enables trucking companies to provide their drivers with preauthorized coded vouchers for presentation at service centers.
- National Purchasing System makes use of Dial-a-Check via FundsNet plastic identification cards that are issued by transportation companies to their drivers.
- Cashcall services are offered at resort hotels, race tracks, casinos, and campgrounds across the U.S., as well as Puerto Rico and the Bahamas. Consumers obtain cash transfers using VISA or MasterCard at FundsNet and other terminals.

the 1990s, the number of people aged 65 and over in the UK has risen from 10.2 to 14.6% of the population.

There is a need to understand the needs of older people and how these needs can be met. This paper reports on a study that explored the needs of older people in the UK and how these needs can be met.

## Methodology

### Design

The study was a qualitative study that explored the needs of older people in the UK and how these needs can be met.

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**4. United Airlines Apollo Services (P.O. Box 66100, Chicago, IL 60666)**

United Airlines' computerized reservation system, Apollo, provides travel agents access to listings for all major airlines as well as for hotels, car rentals, and other travel-related services. In addition to reservation processing, the system provides services such as the Apollo Business System, an office automation application for travel agents that has facilities for accounting, reporting, and other office automation functions.

**5. Cogito Data Systems (1101 State Road, Princeton, NJ 08540)**

Cogito Data Systems, acquired in 1986 by IntelliTEK Computer Corporation, provides processing and professional services for large vehicle fleet maintenance and management, as well as processing and turnkey systems for educational institutions. Processing and professional services for fleet maintenance and management are provided for government and utilities customers through Cogito's operating subsidiaries, Mainstem Corporation and Mainstem Canada Ltd. Another Cogito subsidiary, Automated Fleet Systems Inc., provides computer services for maintenance and management of large vehicle fleets, primarily for private companies and common carriers.

**6. Distribution Sciences, Inc. (1350 E. Touhy Avenue, Des Plaines, IL 60018)**

Distribution Sciences provides the following applications software products to the transportation industry: MATCHPAY, PreShipment Planning, Base Rate, and ZIP Rate PC. With the exception of ZIP Rate PC, these products run on IBM 370, 43XX, and 30XX systems.

Distribution Sciences also provides processing services, including Auto Rate, a freight rating service, and Frate Bank, which offers access to various transportation data bases and software, such as freight rating, carrier selection, distribution analysis, and analysis of carrier tariffs.

**7. Trans Tech Services, Inc. (4309 Hacienda Drive, Pleasanton, CA 94566)**

Trans Tech Services provides operations planning and control systems for the transportation industry and private carriers. The ROUTE/Control system is designed to help private fleets plan and control daily operations, reduce operating costs, and increase labor efficiency and equipment utilization. The system includes workstations, a routing and scheduling process, and a computer-generated road map of the service territory. The DISPATCH/Control system, designed for the common carrier industry, enables management to plan and control the daily functions of delivery operations, customer service, delivery routing and scheduling, and communication with drivers.



**8. Railinc Corporation (1920 L Street N.W., Washington, D.C. 20006)**

Railinc is a wholly owned subsidiary of the Association of American Railroads (AAR), providing information and communications services, including electronic data interchange (EDI) services, industry data bases (statistics, rate information), customized software, and computer timesharing. The two principal EDI products are SAM (Shipper Assist Message service) for high-volume needs and CARLO (Car Location message dial-in service) for low volume needs.

**9. ATA Services, Inc. (2200 Mill Road, Alexandria, VA 22314)**

ATA Services provides TRANSPRO via processing services, as a turn-key system, or as a standalone application software product. TRANSPRO is sold to the American Trucking Association and other trucking companies and contains modules for the following: freight billing, freight accounting, revenue analysis, freight settlements, vehicle maintenance, fuel and mileage reporting, electronic data interchange, and general accounting.

**10. Optimal Decision Systems (4380 Malsbary Road, Cincinnati, OH 45242)**

Optimal Decision Systems provides the following microcomputer application software products to the trucking segment of the transportation industry:

- Distance Plus provides trip planning and sequencing of stops for minimum distance routing.
- Micro-LMS, a decision support system, uses optimization techniques to model logistics networks.
- Optimal Load Runner is a carrier selection and management system that uses optimization techniques to assign truckload and LTL carrier capacity to shipments.
- Optimal Pathfinder analyzes economics of fleet operations and calculates the best mix of transportation resources.
- Optimal Consolidation is a system used to create consolidated multi-stay truckloads from a set of LTL orders.

the 1990s, the number of people with diabetes has increased in all industrialized countries. In the Netherlands, the prevalence of diabetes is estimated to be 10% in 2000, which is a 20% increase over the prevalence in 1980 (1).

Diabetes is a chronic disease with a high prevalence and a high mortality. The most common complications of diabetes are cardiovascular disease, nephropathy, retinopathy, and neuropathy. The prevalence of these complications is high, and the mortality is high. In the Netherlands, the mortality of diabetes is estimated to be 10% in 2000, which is a 20% increase over the mortality in 1980 (1).

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**Information Systems  
Department Issues**



the 1990s, the most common method of data collection has been the use of self-report questionnaires.

Self-report questionnaires are a convenient method of data collection, and have been used extensively in the ergonomics literature. However, there are a number of limitations to this method of data collection, particularly in the case of self-report questionnaires. These limitations are discussed below.

One of the major limitations of self-report questionnaires is the potential for bias in the responses. This bias can be caused by a number of factors, including:

- (1) *Recall bias*: This occurs when respondents are unable to accurately recall the events or conditions being measured.
- (2) *Social desirability bias*: This occurs when respondents provide answers that they believe are socially acceptable or desirable.
- (3) *Response bias*: This occurs when respondents provide answers that are not representative of their true feelings or experiences.

Another major limitation of self-report questionnaires is the potential for incomplete or inconsistent responses. This can be caused by a number of factors, including:

- (1) *Item non-response*: This occurs when respondents do not provide an answer for one or more items on the questionnaire.
- (2) *Response inconsistency*: This occurs when respondents provide inconsistent answers to similar items on the questionnaire.
- (3) *Response variability*: This occurs when respondents provide different answers to the same item on different occasions.

Finally, self-report questionnaires are often limited in their ability to measure complex or subjective phenomena. This is because respondents may have difficulty understanding the questions or may not have the necessary knowledge or experience to provide accurate answers.

In summary, self-report questionnaires are a convenient method of data collection, but they have a number of limitations. These limitations include the potential for bias in the responses, the potential for incomplete or inconsistent responses, and the limited ability to measure complex or subjective phenomena.

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- (3) *Response variability*: This occurs when respondents provide different answers to the same item on different occasions.

Finally, self-report questionnaires are often limited in their ability to measure complex or subjective phenomena. This is because respondents may have difficulty understanding the questions or may not have the necessary knowledge or experience to provide accurate answers.

In summary, self-report questionnaires are a convenient method of data collection, but they have a number of limitations. These limitations include the potential for bias in the responses, the potential for incomplete or inconsistent responses, and the limited ability to measure complex or subjective phenomena.



## IV

## Information Systems Development Issues

## A

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### Major Issues

#### I. Issues and Objectives

Key issues for transportation company IS departments include cost control and profitability, company productivity, information access, communications, and improved services to end-user departments as well as to customers.

- Cost control is essential to transportation companies operating in the deregulated environment. IS managers are searching for ways to improve productivity both in developing and implementing information services, as well as in providing transportation services.
- IS departments are acutely aware of the need for information. Managers need information to make decisions quickly. For example, the airlines use information systems to determine how much discounting must be done in order to maximize revenues. LTL trucking operations use information systems for packing and routing shipments to improve productivity and maximize revenues.
- Communications needs are especially high in the transportation industry due to the many remote sites involved. These sites are often mobile, which presents additional challenges.
- Customers in the transportation industry increasingly expect new services. IS departments must find ways of providing these services so that their companies remain competitive. For example, IS departments implement systems that permit customers to pinpoint the location of goods being shipped at any given time. Other customers require the electronic transfer of data for billing, orders, and routing (EDI).



The following objectives, identified by IS managers, center on profitability and remaining competitive:

- Reduce costs, including equipment maintenance and personnel costs, while maintaining the resources needed to develop new systems and maintain existing systems
- Develop new applications, while improving the application development process. This process involves obtaining better tools for the application development staff
- Develop efficient data communications networks to improve data transfer between various points of transaction involving customers, as well as within their organizations
- Select and implement software products and other information services that will fulfill the requirements of end-user departments and improve service offerings to customers
- Purchase hardware which will meet management's needs and be most reliable and cost-effective in the long run

Key issues and objectives for IS managers in the transportation industry are shown in Exhibits IV-1 and IV-2.

EXHIBIT IV-1

### **TRANSPORTATION: KEY ISSUES**

- Cost Control/Profitability
- Improved Company Productivity
- Information Access/Communications
- Improved Services to User Departments and Customers

the 1990s, the number of people with a mental health problem has increased by 50% (Mental Health Act 1983, 1990).

There is a growing awareness of the need to improve the lives of people with mental health problems. The Department of Health (1999) has set out a vision of a new mental health system, which will be based on the following principles: (1) a focus on the needs of the individual; (2) a focus on prevention and early intervention; (3) a focus on recovery; (4) a focus on the needs of the community; (5) a focus on the needs of the family; (6) a focus on the needs of the carer; (7) a focus on the needs of the patient; (8) a focus on the needs of the professional; (9) a focus on the needs of the system.

The Department of Health (1999) has also set out a vision of a new mental health system, which will be based on the following principles: (1) a focus on the needs of the individual; (2) a focus on prevention and early intervention; (3) a focus on recovery; (4) a focus on the needs of the community; (5) a focus on the needs of the family; (6) a focus on the needs of the carer; (7) a focus on the needs of the patient; (8) a focus on the needs of the professional; (9) a focus on the needs of the system.

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## EXHIBIT IV-2

**TRANSPORTATION:  
OBJECTIVES**

- Reduce Costs/Increase Profitability
- Increase Transportation System Productivity
- Increase Programmer Productivity
- Improve Application Development Process
- Develop/Implement Applications for Improved Customer Services
- Improve Data Communications Networks
- Purchase Hardware

**2. Impact of New Technology**

Transportation companies gain their respective competitive advantages through the use of information technology by increasing productivity, decreasing costs, and improving customer services. Often, in the deregulated environment, these items are essential for a company to even remain in operation.

Information technology, such as data communications, is especially important to transportation companies due to the volatile and very competitive nature of the industry. In addition, innumerable points of transaction are characteristic of the industry. Data communication networks relay essential, current information to managers for decision making in areas such as pricing. These networks also provide ways to offer additional services to customers, such as shipment tracking and electronic billing.

Exhibit IV-3 outlines the impact of new technology on the transportation industry.



## EXHIBIT IV-3

**TRANSPORTATION:  
IMPACT OF NEW TECHNOLOGY**

- Increased Productivity
- Lower Costs
- Improved Customer Services
- Data Transfer within Organization
- Data Communication between Points of Transaction
- Applications at User Department Levels

**B**

## New Applications

INPUT's respondents reported that 50% of major new applications planned for 1988 will be developed internally. Eleven percent of the major projects planned will be contracted out fully to professional services organizations. The remaining 39% will be combination efforts involving both internal application development staff and external professional services organizations (see Exhibit IV-4).

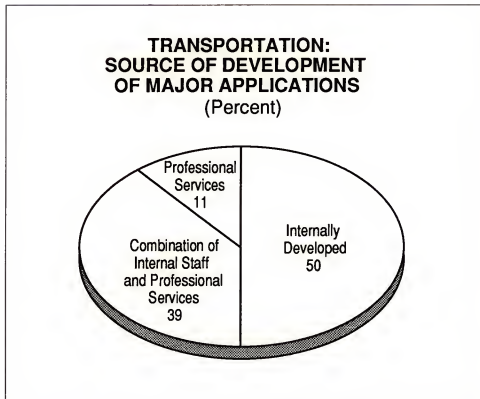
Respondents identified the following cross-industry and industry-specific applications to be implemented in 1988:

- Budgeting
- General Ledger
- Accounts Payable
- Accounts Receivable
- Fixed Assets
- Integrated Accounting
- Frequent Flyer Accounting
- Payroll
- Flexible Benefits
- Crew Management
- Enhancements to Reservation System
- Scheduling
- Logistics Control
- Materials Management





EXHIBIT IV-4



- Maintenance Management
- Shipping/Invoicing
- EDI
- Sales Tax
- Simplified Rating
- Sales Analysis
- Yield Management
- Exception Reporting
- Flight Operations
- Data Base Management
- Desktop Publishing
- Image Processing
- Private Networks

**C****Budget Analysis**

IS budgets as a percentage of total corporate revenue averaged 1.0% for transportation respondents in 1987. During 1987, IS spending for the group increased an average of 2% over 1986. However, the corresponding group of transportation respondents surveyed by INPUT during 1986 expected to increase spending approximately 10% in 1987. Plans to increase spending for information systems were modified due to increased price competition, resulting in less than expected revenue levels, and continued restructuring of the industry, leading to consolidation.

the 1990s, the number of people in the world who are under 15 years of age is expected to increase from 1.1 billion to 1.5 billion (United Nations 1998).

There are a number of reasons why the number of children in the world is increasing. One of the main reasons is that the number of children who are surviving to adulthood is increasing. This is due to a number of factors, including improved medical care, better nutrition, and a decrease in child mortality.

Another reason why the number of children in the world is increasing is that the number of children who are being born is increasing. This is due to a number of factors, including a decrease in the age at which women are having children, and an increase in the number of children who are being born to women who are already having children.

There are a number of challenges that are associated with the increasing number of children in the world. One of the main challenges is that there is a need for more resources to care for these children. This includes more schools, more health care, and more social services.

Another challenge is that there is a need for more jobs to support these children. This is because many children are living in poverty, and their parents are unable to provide for them. This can lead to children being forced to work, which can have a negative impact on their health and education.

There are a number of ways that we can address these challenges. One way is to invest in education and health care for children. This can help to improve their lives and reduce the number of children who are living in poverty.

Another way is to create more jobs for parents. This can help to support their families and reduce the number of children who are forced to work. This can be done by providing training and support for parents, and by creating more opportunities for them to work.

There are a number of other ways that we can address these challenges. For example, we can provide more social services for children, and we can create more opportunities for them to participate in sports and other activities. These are all ways that we can help to improve the lives of children in the world.

The number of children in the world is increasing, and this is a challenge that we need to address. By investing in education and health care, and by creating more jobs for parents, we can help to improve the lives of children in the world.

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Respondents whose IS budgets increased in 1987 attributed increases to corporate growth, IS personnel expenses, computer hardware, communications, and the implementation of new applications. IS managers in the transportation industry expect to increase spending for information services by 7% in 1988. Exhibit IV-5 shows the 1987 budget distribution and projects the growth of budget categories in 1988. As in 1987, the most significant budget increases for 1988 will be in the areas of IS personnel, computer hardware, and communications.

IS personnel will be involved in developing and implementing new applications, as well as enhancing and maintaining existing systems. According to respondents, 30% of applications development personnel within IS organizations are assigned to the development of new systems, 33% are assigned to the enhancement of existing systems, and 37% are assigned to the maintenance of existing systems (see Exhibit IV-6).

Increases in hardware budgets for 1988 were consistent (5-6%) across all categories of hardware—mainframes, minicomputers, microcomputers, mass storage devices, and other hardware, including peripheral devices—although allocation of the total IS budget to each of these categories of hardware varies.

Many companies currently handle voice communications separately from the IS budget. Respondents with IS budgets that include both data and voice communications plan to increase spending in both areas during 1988.

Respondents reported that total corporate IS expenditures included the corporate IS budget as well as some information systems expenditures of end user departments. However, user departments are generally responsible for purchasing PCs and other related items. Processing services, such as on-line data base access, are also often purchased directly by user departments. In addition, some IS expenditures are charged back to user departments. IS managers indicated a trend toward charging more of their services back to the user departments.

the first part of the paper, the authors discuss the importance of the role of the state in the development of the economy. They argue that the state should play a leading role in the development of the economy, particularly in the areas of infrastructure, education, and health care. This is because the private sector is often unable to provide these services in a timely and efficient manner. The authors also discuss the importance of the role of the state in the development of the legal system. They argue that the state should play a leading role in the development of the legal system, particularly in the areas of contract law, property law, and tort law. This is because the private sector is often unable to provide these services in a timely and efficient manner.

In the second part of the paper, the authors discuss the importance of the role of the state in the development of the financial system. They argue that the state should play a leading role in the development of the financial system, particularly in the areas of banking, insurance, and securities. This is because the private sector is often unable to provide these services in a timely and efficient manner. The authors also discuss the importance of the role of the state in the development of the labor market. They argue that the state should play a leading role in the development of the labor market, particularly in the areas of minimum wage, maximum hours, and unemployment benefits. This is because the private sector is often unable to provide these services in a timely and efficient manner.

In the third part of the paper, the authors discuss the importance of the role of the state in the development of the social safety net. They argue that the state should play a leading role in the development of the social safety net, particularly in the areas of social security, unemployment insurance, and health care. This is because the private sector is often unable to provide these services in a timely and efficient manner. The authors also discuss the importance of the role of the state in the development of the environment. They argue that the state should play a leading role in the development of the environment, particularly in the areas of air quality, water quality, and land use. This is because the private sector is often unable to provide these services in a timely and efficient manner.

In the fourth part of the paper, the authors discuss the importance of the role of the state in the development of the education system. They argue that the state should play a leading role in the development of the education system, particularly in the areas of primary and secondary education. This is because the private sector is often unable to provide these services in a timely and efficient manner. The authors also discuss the importance of the role of the state in the development of the health care system. They argue that the state should play a leading role in the development of the health care system, particularly in the areas of primary and secondary health care. This is because the private sector is often unable to provide these services in a timely and efficient manner.

In the fifth part of the paper, the authors discuss the importance of the role of the state in the development of the infrastructure system. They argue that the state should play a leading role in the development of the infrastructure system, particularly in the areas of roads, bridges, and public transportation. This is because the private sector is often unable to provide these services in a timely and efficient manner. The authors also discuss the importance of the role of the state in the development of the energy system. They argue that the state should play a leading role in the development of the energy system, particularly in the areas of electricity, gas, and oil. This is because the private sector is often unable to provide these services in a timely and efficient manner.

In the sixth part of the paper, the authors discuss the importance of the role of the state in the development of the housing system. They argue that the state should play a leading role in the development of the housing system, particularly in the areas of affordable housing, rental control, and public housing. This is because the private sector is often unable to provide these services in a timely and efficient manner. The authors also discuss the importance of the role of the state in the development of the transportation system. They argue that the state should play a leading role in the development of the transportation system, particularly in the areas of roads, bridges, and public transportation. This is because the private sector is often unable to provide these services in a timely and efficient manner.

In the seventh part of the paper, the authors discuss the importance of the role of the state in the development of the environment. They argue that the state should play a leading role in the development of the environment, particularly in the areas of air quality, water quality, and land use. This is because the private sector is often unable to provide these services in a timely and efficient manner. The authors also discuss the importance of the role of the state in the development of the labor market. They argue that the state should play a leading role in the development of the labor market, particularly in the areas of minimum wage, maximum hours, and unemployment benefits. This is because the private sector is often unable to provide these services in a timely and efficient manner.

## EXHIBIT IV-5

**TRANSPORTATION:  
1987 BUDGET DISTRIBUTION AND  
1988 PROJECTED GROWTH**

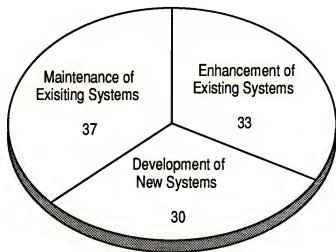
BUDGET CATEGORY	PERCENT OF 1987 IS BUDGET	1988 PROJECTED GROWTH (% +/-)
Personnel Salaries and Fringes	43	8
Mainframes	10	6
Minicomputers	3	5
Microcomputers	1	5
Mass Storage Devices	3	6
Other Hardware	5	6
Total Hardware	22	6
Data Communications	7	6
Voice Communications	5	5
Total Communications	12	6
Professional Services	5	2
Processing Services	0*	10
Application Software	1	2
System Software	3	3
Hardware Maintenance	8	1
Software Maintenance	2	4
Total External Products/Services	19	5
Other	4	4
TOTAL	100	7

\* Less than 1%



EXHIBIT IV-6

**TRANSPORTATION:  
ASSIGNMENT OF APPLICATIONS  
DEVELOPMENT STAFF  
(Percent)**









## New Opportunities

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### A

#### Integrated Systems

An excellent opportunity for information services vendors providing systems for the transportation industry lies in integrated systems that combine several industry-specific applications. For example, the trucking industry uses integrated systems that combine vehicle maintenance, parts inventory, preventive maintenance, scheduling, mechanic statistics, repair orders, and fuel and mileage reporting.

Transportation companies also require systems that provide cross-industry type applications such as accounting, financial reporting, payroll, human resource management, inventory control, and planning and analysis, which are tailored to meet their industry segment requirements and are integrated with very industry-specific applications related to their particular market niches. Market niches in the transportation industry include overnight air express and piggy-back railroad operations.

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### B

#### Intermodal Transportation Systems

The development of intermodal transportation offerings has provided many opportunities to information services vendors targeting the transportation industry. Intermodal offerings include surface/air cargo operations, trucking/railroad operations, oceanliner/railroad operations, and more. Packing, routing, invoicing, and tracking involved with container-ship businesses require sophisticated information systems to ensure on-time delivery at a competitive price.

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### C

#### Communications

Many opportunities are also opening up for transportation industry information services in the area of data communications. Electronic data interchange (EDI), local area networks, and satellite communications provide the means for applications to be brought down to the vehicle level and for information to be transmitted to and from the appropriate points.

the 1990s, the number of people in the world who are under 15 years of age has increased from 1.1 billion to 1.3 billion, and the number of people aged 65 and over has increased from 0.2 billion to 0.4 billion (United Nations 2002).

There are a number of reasons why the world population is increasing. One of the main reasons is that the number of children born to each woman has increased. This is due to a number of factors, including the fact that women are now having children at a younger age, and that there is a higher survival rate for children. Another reason is that the number of people who are surviving to old age has increased. This is due to a number of factors, including the fact that people are now living longer, and that there is a higher survival rate for people who are aged 65 and over.

The increase in the world population has a number of implications. One of the main implications is that there is a greater demand for resources. This is because there are more people who need food, water, and shelter. Another implication is that there is a greater demand for services. This is because there are more people who need education, health care, and social services. The increase in the world population also has a number of environmental implications. This is because there are more people who are using natural resources, and this is leading to a number of environmental problems, including global warming and deforestation.

There are a number of ways in which the world population can be managed. One of the main ways is to reduce the number of children born to each woman. This can be done by providing women with access to family planning services, and by educating women about the benefits of family planning. Another way is to reduce the number of people who are surviving to old age. This can be done by providing people with access to health care services, and by educating people about the benefits of a healthy lifestyle.

The world population is increasing, and this has a number of implications. It is important to understand the reasons why the world population is increasing, and to find ways in which the world population can be managed. This will help to ensure that the world is a better place for everyone.

## 2. THE CHANGING DEMOGRAPHIC PROFILE OF THE WORLD POPULATION

### 2.1. The World Population: A Brief History

The world population has increased from about 250 million in 1 AD to about 6 billion in 2000. This increase has been due to a number of factors, including the fact that the number of children born to each woman has increased, and that the number of people who are surviving to old age has increased. The increase in the world population has a number of implications, including a greater demand for resources and services, and a number of environmental problems.

The world population is increasing, and this has a number of implications. It is important to understand the reasons why the world population is increasing, and to find ways in which the world population can be managed. This will help to ensure that the world is a better place for everyone.

**D****EDI**

Large transportation companies have the resources required to become involved with EDI, making these services an excellent opportunity for information services vendors. Even the typically smaller trucking companies are benefitting from EDI with improved efficiencies and increased customer services, due to the availability of affordable computer systems.

Often, incentives are provided to companies for using these services. The U.S. Customs Service, which controls cargo movement through U.S. ports, is promoting EDI in order to cut paperwork. Transportation companies in particular benefit from EDI because of the many locations involved in transactions.

the 1990s, the number of people in the UK who are aged 65 and over has increased from 10.5 million to 13.5 million, and the number of people aged 75 and over has increased from 4.5 million to 6.5 million (Office for National Statistics 2000).

There is a growing awareness of the need to address the needs of older people, and the need to ensure that the health care system is able to meet the needs of older people. The Department of Health (2000) has published a strategy for older people, which sets out the government's commitment to older people and the need to ensure that the health care system is able to meet the needs of older people.

The strategy for older people is based on the following principles: (1) older people should be able to live independently in their own homes; (2) older people should be able to access the services they need; (3) older people should be able to participate in the decisions that affect their lives; (4) older people should be able to live in a safe and secure environment; (5) older people should be able to access the services they need; (6) older people should be able to live in a safe and secure environment; (7) older people should be able to access the services they need; (8) older people should be able to live in a safe and secure environment.

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## Conclusions and Recommendations



the 1990s, the number of people in the UK who are aged 65 and over has increased from 10.5 million to 13.5 million (15.5% of the population).

There is a growing awareness of the need to address the needs of older people, and the Government has set out a strategy for the 21st century in the White Paper on *Ageing Better: The Government's Strategy for Older People* (Department of Health 1999). This strategy is based on the following principles:

- (i) older people should be able to live independently and actively in their own homes;
- (ii) older people should be able to live in their own homes for as long as possible;
- (iii) older people should be able to live in their own homes with dignity and respect;
- (iv) older people should be able to live in their own homes with safety and security;
- (v) older people should be able to live in their own homes with comfort and convenience.

These principles are reflected in the following objectives of the strategy:

- (i) to ensure that older people are able to live in their own homes for as long as possible;
- (ii) to ensure that older people are able to live in their own homes with dignity and respect;
- (iii) to ensure that older people are able to live in their own homes with safety and security;
- (iv) to ensure that older people are able to live in their own homes with comfort and convenience.

The strategy also sets out a number of key actions to be taken to achieve these objectives:

- (i) to ensure that older people are able to live in their own homes for as long as possible;
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- (iv) to ensure that older people are able to live in their own homes with comfort and convenience.

## VI

## Conclusions and Recommendations

Information vendors targeting the transportation sector need to provide systems that center on containing costs, increasing the productivity of IS and other personnel, and improving the efficiency of transportation systems.

Information systems must address the specific requirements of particular market niches within the transportation sector, such as LTL trucking operations and TOFC rail operations. Transportation companies also want integrated systems that combine cross-industry applications—accounting, finance, inventory control, and human resource management—with industry-specific applications for their particular market niches.

The systems should enable transportation companies to offer their customers additional services which are clearly recognizable to these customers as a benefit, such as cost savings, just-in-time services, or the ability to pinpoint the location of a shipment at any time.

In addition, information services vendors should provide services which will inevitably be implemented by much of the targeted industry—services such as EDI, which will be used by transportation companies to compete successfully in terms of both pricing and service offerings.

the 1990s, the number of people in the world who are undernourished has increased from 600 million to 800 million.

There are a number of reasons for this increase. One of the main reasons is that the world population has increased from 5 billion in 1987 to 6 billion in 2000, and is projected to reach 9 billion by 2050.

Another reason is that the world's population is becoming more urban. In 1987, 40% of the world's population lived in urban areas, but this is projected to increase to 60% by 2050.

A third reason is that the world's population is becoming more aged. In 1987, 10% of the world's population was aged 65 and over, but this is projected to increase to 20% by 2050.

Finally, there is a growing inequality in the distribution of income and resources. The richest 20% of the world's population now owns 80% of the world's wealth, while the poorest 20% owns only 1%.

These factors are all contributing to the increase in the number of people who are undernourished. It is clear that we need to take action to address this problem.

One of the most important actions we can take is to increase the production of food. This can be done by increasing the area of land under cultivation, by improving the yields of crops, and by reducing food losses.

Another important action is to improve the distribution of food. This can be done by increasing the number of food aid organizations, by improving the efficiency of food distribution systems, and by reducing the cost of food.

Finally, we need to address the underlying causes of undernutrition. This includes improving the health and education of women, increasing the income of the poor, and reducing inequality.

By taking these actions, we can reduce the number of people who are undernourished and improve the lives of the world's poor.

The World Bank has estimated that it will cost \$100 billion per year to feed the world's population in 2050. This is a huge sum of money, but it is a price that we must pay if we are to ensure that everyone has enough to eat.

It is time to start taking action. We need to work together to find solutions to the problem of undernutrition. We need to ensure that everyone has enough to eat, and that everyone has a chance to live a healthy and productive life.

The world's population is growing, and the number of people who are undernourished is increasing. We need to take action now to address this problem.

By increasing food production, improving food distribution, and addressing the underlying causes of undernutrition, we can ensure that everyone has enough to eat.

It is our responsibility to ensure that everyone has enough to eat. We need to work together to find solutions to the problem of undernutrition.

The world's population is growing, and the number of people who are undernourished is increasing. We need to take action now to address this problem.

By increasing food production, improving food distribution, and addressing the underlying causes of undernutrition, we can ensure that everyone has enough to eat.







TR-A

Appendix: Forecast Data  
Base

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The logo consists of the letters "TR-A" in a white, serif font, centered within a dark, textured rectangular box.

## Appendix: Forecast Data Base

This appendix contains the following forecast information, as shown in Exhibits TR-A-1 through TR-A-5:

- Transportation industry sector market size by delivery modes for each year 1986-1992.
- Transportation industry sector market growth rates for 1986-1987.
- Transportation industry sector average annual growth rate (AAGR) for each delivery mode for the five-year period 1987-1992.
- Market sizes by delivery mode, 1986-1987 market growth rates, and AAGRs for the period 1987-1992 are also presented for transportation industry segments including airlines, railroads, trucking and other transportation.

and the 1990s. The authors also found that the prevalence of *S. pneumoniae* serotype 23F was higher in the 1990s than in the 1980s.

The present study was carried out in a region of the north of the Netherlands, where the prevalence of pneumococcal carriage is high. The prevalence of pneumococcal carriage in the present study was 23.8% in the 1990s and 25.2% in the 1980s. The prevalence of pneumococcal carriage in the present study was similar to that reported in other studies in the Netherlands [10, 11]. The prevalence of pneumococcal carriage in the present study was also similar to that reported in other studies in the Netherlands [10, 11].

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**TRANSPORTATION INDUSTRY SECTOR  
INDUSTRY-SPECIFIC USER EXPENDITURES FORECAST  
1987-1992**

Segmentation by Delivery Mode	(\$ M) 1986	86-87 Growth (Percent)	(\$ M) 1987	(\$ M) 1988	(\$ M) 1989	(\$ M) 1990	(\$ M) 1991	(\$ M) 1992	AAGR 87-92 (Percent)
Processing/Network Services									
Remote Comp/Batch	212	11	236	269	312	365	431	506	16
Facility Management	27	4	28	29	29	29	30	30	1
Total Processing Services	239	10	264	298	341	394	461	536	15
Applications Software									
Mainframe/Mini	140	24	173	213	260	314	374	442	21
Micro	34	56	53	73	94	112	130	149	23
Total Application Software	174	30	226	286	354	426	504	591	21
Turnkey Systems	134	12	150	168	188	211	236	264	12
Sector Total	547	17	640	752	883	1,031	1,201	1,391	17

the 1990s, the number of people in the world who are under 15 years of age has increased from 1.1 billion to 1.3 billion, and the number of people aged 65 and over has increased from 0.2 billion to 0.4 billion (United Nations 2002).

As a result of the demographic changes, the number of people in the world who are aged 15–64 years has increased from 3.9 billion in 1990 to 4.5 billion in 2000. The number of people aged 15–64 years in the world is projected to increase to 5.1 billion by 2015, and to 5.5 billion by 2030 (United Nations 2002).

As a result of the demographic changes, the number of people in the world who are aged 65 and over has increased from 0.2 billion in 1990 to 0.4 billion in 2000. The number of people aged 65 and over in the world is projected to increase to 0.6 billion by 2015, and to 0.9 billion by 2030 (United Nations 2002).

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**AIRLINE INDUSTRY SEGMENT  
INDUSTRY-SPECIFIC USER EXPENDITURE FORECAST**

Segmentation by Delivery Mode	(\$ M) 1986	86-87 Growth (Percent)	(\$ M) 1987	(\$ M) 1988	(\$ M) 1989	(\$ M) 1990	(\$ M) 1991	(\$ M) 1992	AAGR 87-92 (Percent)
Processing Services	21	14	24	27	31	36	42	48	15
Applications Software	16	38	22	27	33	40	48	58	21
Turnkey Systems	13	0	13	15	17	19	21	24	13
Total	50	18	59	69	81	95	111	130	17



**RAILROAD INDUSTRY SEGMENT  
INDUSTRY-SPECIFIC USER EXPENDITURE FORECAST**

Segmentation by Delivery Mode	(\$ M) 1986	86-87 Growth (Percent)	(\$ M) 1987	(\$ M) 1988	(\$ M) 1989	(\$ M) 1990	(\$ M) 1991	(\$ M) 1992	AAGR 87-92 (Percent)
Processing Services	18	11	20	22	25	29	34	38	14
Applications Software	14	43	20	25	31	37	44	54	22
Turnkey Systems	12	0	12	14	16	18	20	21	12
Total	44	18	52	61	72	84	98	113	17

the 1990s, the number of people with diabetes has increased in all industrialized countries. In the Netherlands, the prevalence of diabetes has risen from 1.5% in 1975 to 5.5% in 1995 (1). The prevalence of diabetes is expected to increase further in the next decades (2).

Diabetes is a chronic disease with a high prevalence of complications. The most common complications are retinopathy, nephropathy, neuropathy, cardiovascular disease, and foot ulcers. The prevalence of these complications is high, and the risk of complications is increased in people with diabetes who are not treated with insulin (3). The prevalence of complications is also increased in people with diabetes who are not treated with insulin (4).

The prevalence of complications is also increased in people with diabetes who are not treated with insulin (5). The prevalence of complications is also increased in people with diabetes who are not treated with insulin (6). The prevalence of complications is also increased in people with diabetes who are not treated with insulin (7). The prevalence of complications is also increased in people with diabetes who are not treated with insulin (8).

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**TRUCKING INDUSTRY SEGMENT  
INDUSTRY-SPECIFIC USER EXPENDITURE FORECAST**

Segmentation by Delivery Mode	(\$ M) 1986	86-87 Growth (Percent)	(\$ M) 1987	(\$ M) 1988	(\$ M) 1989	(\$ M) 1990	(\$ M) 1991	(\$ M) 1992	AAGR 87-92 (Percent)
Processing Services	151	11	168	190	217	251	294	342	15
Applications Software	102	37	140	178	221	266	314	367	21
Turnkey Systems	91	3	94	105	117	131	147	167	12
<b>Total</b>	<b>344</b>	<b>17</b>	<b>402</b>	<b>473</b>	<b>555</b>	<b>648</b>	<b>755</b>	<b>876</b>	<b>17</b>

the 1990s, the number of people in the UK who are aged 65 and over has increased from 10.5 million to 13.5 million, and the number of people aged 75 and over has increased from 4.5 million to 6.5 million (Office for National Statistics 2000).

There is a growing awareness of the need to address the needs of older people, and the need to ensure that the health care system is able to meet the needs of older people. The Department of Health (2000) has set out a strategy for the health care system to meet the needs of older people, and the Health Service Research Unit (2000) has set out a strategy for the health care system to meet the needs of older people.

The Health Service Research Unit (2000) has set out a strategy for the health care system to meet the needs of older people. The strategy is based on the following principles: (1) to ensure that the health care system is able to meet the needs of older people; (2) to ensure that the health care system is able to meet the needs of older people; (3) to ensure that the health care system is able to meet the needs of older people.

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**OTHER TRANSPORTATION INDUSTRY SEGMENT  
INDUSTRY-SPECIFIC USER EXPENDITURE FORECAST**

Segmentation by Delivery Mode	(\$ M) 1986	86-87 Growth (Percent)	(\$ M) 1987	(\$ M) 1988	(\$ M) 1989	(\$ M) 1990	(\$ M) 1991	(\$ M) 1992	AAGR 87-92 (Percent)
Processing Services	48	10	53	59	68	78	91	108	15
Applications Software	32	38	44	56	69	83	98	112	21
Turnkey Systems	29	3	30	34	38	43	48	52	12
Total	109	17	127	149	175	204	237	272	16

the 1990s, the number of people who have been employed in the public sector has increased in all countries. The increase has been particularly large in the United States, where the public sector has grown from 10.5% of the total workforce in 1970 to 17.5% in 1995.

There are a number of reasons for the increase in public sector employment. One reason is that the public sector has become a more important part of the economy. In many countries, the public sector is now responsible for a large share of the total output. This has led to an increase in the number of people who are employed in the public sector.

Another reason for the increase in public sector employment is that the public sector has become a more attractive place to work. This is because the public sector offers a number of advantages over the private sector. For example, public sector jobs are often more secure and offer better benefits than private sector jobs.

There are also a number of reasons why the public sector has become a more important part of the economy. One reason is that the public sector has become a more important source of revenue for governments. This is because the public sector has become a more important part of the economy and has therefore generated more revenue for governments.

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