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Organization Types and Their Business Activities on the Internet

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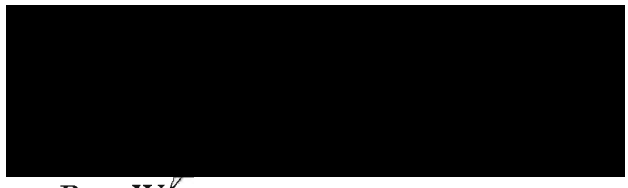
DECLARATION

I certify that this Thesis contains no material that has been accepted for the award of any other degree or diploma in any institute, college or university. To the best of my knowledge and belief, it contains no material previously published or written by another person, except where due reference is made in the text of the thesis.



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Abstract

The Internet was developed in the United States in 1960s for protecting from nuclear war with Russia originally. With development of the information technology, more and more people enjoy going on the Internet, which is no longer privilege specifically for academic, government, and research communities. There are potentially vast opportunities for business.

Organizations doing business has been growing dramatically since 1995. The trend keeps going fast. The thesis surveyed directly on the Internet over a period of 3 months on a fortnightly basis, which started from 2/12/1996, and ended on 10/2/1997. The thesis focused on the questions as stated below.

- What types of organizations are doing business on the Internet?
- What types of business activities are being carried on the Internet?
- How are the organizations the their business activities evolving over time?

Based on the organization types classified by the Australian Bureau of Statistics, management theory of business activities, and trendline drew from the Internet, grades were set up. The higher the grade the greater the increase in relative activity over time and the greater the promise for the organization type / business activity in terms of being a pointer for establishing a successful Internet presence.

Due to the period limitation the thesis surveyed, further study could be done, such as difference of Marketing with or without the Internet, orders directly from the Internet, improvement of financial activities on the Internet, effectiveness of Human Resources on the Internet, ect.

Acknowledgement

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1. Introduction

It is said that business has only discovered the Internet since 1995, despite the Internet and the whole area of electronic communication having grown dramatically over a long period (Schrader 1996). Organisation and individual access has been growing at a phenomenal rate worldwide. As the Internet continues to grow, so will the services associated with it - services like videoconferencing, live audio feeds, real-time video, and interactive gaming. For instance, it is now possible for any organisation and any individual connected to the Internet to undertake many activities associated with information seeking. The Internet makes communication possible within and between organisations from many different fields.

The Internet began as a way to link academic, government, and research communities for the exchange of information and for access to remote computing, but the arrival of the World Wide Web fundamentally changed perceptions about what the Internet is and how it can be used. The Internet has a vast potential for delivering commercially viable services to business, the home, and the academic community. This recognition has led to explosive, uncontrolled growth in the Internet's usage. The resources that are available to businesses with today's Internet services and enterprise wide connectivity enable unlimited opportunities for large and small organisations alike.

In the past, big companies created wealth through their ability to marshal resources for their advantage. Today, smaller, swifter companies gain market share through responsiveness to their customers (Mohta 1996). Many areas can be identified where organisations pioneer the use of technology to gain strategic advantage. The relatively low price of high-technology gadgets allows millions more to participate. Inexpensive data will allow, those who master the technology, the ability to substantially improve their marketing efforts.

The Internet is ripe for online database usage of almost all kinds. A number of factual database providers are offering their products on the Internet, with ready reference resources being of great use to both the information professional and the general public. The Internet has the ability to provide the services with the greatest global outreach. Recent developments have also used the Internet's capability for internal company communications, as well as online customer access.

Along with other developing information technologies, including multimedia, work-flow systems, integrated world wide financial systems, the Internet and the World Wide Web are evolving new technologies which support and complement each other. So much so, that the Internet revolution has the ability to change the nature of communication from internal, organisational and private, as it is now, to external, constituent-based and public.

To what extent will the Internet be able to provide for this business future? Can some measure of understanding be obtained by analysing current growth patterns? These questions can be asked about the growing numbers of organisations using the Internet. What types of organisation are using the Internet for business? What type of transactions are these organisations undertaking on the Internet? What are the trends of business Internet usage?

The Internet is becoming part of mainstream business activity, to the extent that it is beginning to be used in formulating business decisions (Siegel et al. 1996). By examining the rates of growth over time of business oriented usage of the Internet, it is possible to see what types of business and which types of business transaction are meeting with some success.

This thesis attempts to first determine an appropriate taxonomy of business Internet usage, and then, using the categories, track the level of Internet activities over time.

This should provide some insight into the areas of successful business Internet activities now, and into the future.

2. Literature Review

2.1 Development of Technology Growing on the Internet

The Internet was developed in the United States in 1960s. After its formal launching in 1969, it was adapted by the US army (Banaghan 17 June 1997). The threat of nuclear war with Russia resulted in the Advanced Research Projects Agency (ARPA) taking charge of finding the best way to interconnect various computer sites, with the goal of building a fail-safe national communications network. The original Internet, the ARPAnet, was funded as a research project in computer networking. The researchers quickly started using the network for exchanging information. Its decentralised design meant that if some computers failed, the rest would still carry on the activities of the network.

In the 1970s, the ARPA project developed into the first packet-switched computer network in the United States. Packet switching solved the difficulty of creating a network that could survive attack while providing the greatest communication flexibility. Four universities were originally connected to ARPAnet. They were the University of California at Los Angeles, the University of California at Santa Barbara, the Stanford University and the University of Utah in Salt Lake City. This was the embryo Internet.

By 1972, there were 40 different sites attached to ARPAnet (Kelly 1994). Simple applications, such as sending small text files between individual users electronically (e-mail), control of a remote computer over the network (remote login), and large text and data file transfers between computers (File Transfer Protocol (FTP)), were in use. The core Internet technologies were in place.

In 1974, the Transmission Control Protocol and the Internet Protocol (TCP/IP) were released (Kelly 1994). Communications protocols are rules that govern the way one

machine communicates with another. TCP/IP defines the way in which messages are passed among computer networks on the Internet. The use of TCP/IP exclusively for Internet participation is the main reason for the subsequent success of the Internet.

In the early 1970s, two things were important to the development of the Internet. One was a powerful operating system, UNIX, another was a low-cost minicomputer, Digital Equipment Corporation (DEC) (Kelly 1994). In 1976, UNIX-to-UNIX Copy Program (UUCP), a software package, was created. With UUCP, any UNIX computer with a modem could call any other UNIX computer with a modem and transfer files. DEC provided a breakthrough in relatively low-cost computers, compared with the large mainframes from IBM and Control Data that cost hundreds of thousands or even millions of dollars. The UNIX/DEC combination illustrated that an affordable computer could run an operating system that had built-in support for networking. Networking was no longer an esoteric act performed on expensive, government-sponsored computer facilities. The UNIX/DEC made possible a very large, casual network of computers running over the public telephone systems.

At that time, ARPAnet was serving a number of research centers that were connected over their high-speed dedicated network. In 1979, Computer Science Research Network (CSnet) was funded by the National Science Foundation, which allowed slower telephone lines and computers with UUCP to join the Internet (Kelly 1994). In 1980, gateways using TCP/IP were installed, which could link ARPAnet and CSnet each other (Verity, et al 14 November 1994). Toward the end of the 1970s, networks were starting to pop up everywhere, and they ran on all kinds of computers. By 1982, researchers could dial into CSnet to read and send e-mail to sites within CSnet and to sites within ARPAnet. Thus the physical implementation of the Internet was ready (Kelly 1994).

At the same time, Usenet, an electronic newspaper, was published. Usenet's function was to provide a network that would enable any user to summit an article that world be routed to all computers on the network. The hierarchies used in Usenet formed a

logic grouping of messages. Usenet news is an integral and still powerful part of the Internet user's tool set now. The Usenet and its ideas were incorporated into the Internet.

By 1983, Bitnet also had emerged (Kelly 1994). Under Bitnet operation, articles can be routed to a user via e-mail when the user subscribed to the appropriate Listserv, a mechanism within Bitnet. In the same year, a personal computer bulletin-board system called FidoBBS came out. The software rapidly grew in popularity across the US. The following year, FidoNet was born, which was a networking package that could link all the different FidoBBS via modem and telephone line. By 1987, the UUCP was ported to the IBM PC and its clones (Kelly 1994). From then on, PCs and their clones could be used worldwide, linking all kinds of users. Networks were cropping up everywhere.

In the mid-1980s, the Internet started experiencing exponential growth, which continues to this day. Universities and other users began placing information services such as library catalogues and systems online. Quickly people discovered that they could no longer easily find the information they sought on the Internet. For the remainder of the 1980s, and even through to 1991, the situation was still not too bad. A handful of electronic guides appeared during the end of this period to help users find what they were looking for from the Internet. These guides were just an electronic equivalent of a paper list.

In the late 1980s, fearing erosion by foreign competition, the National Science Foundation Network (NSFnet) was created, which linked a handful of supercomputer centers across the United States (Kelly 1994). The purpose of NSFnet was to provide the highest quality computing services to researchers nation-wide, NSFnet continues to be in place today, providing an overall administrative capacity.

NSFnet has replaced ARPAnet. ARPAnet was removed by 1990. Some networks merged or closed down, such as Bitnet, CSnet. Some new, independent networks emerged, such as CompuServe, Prodigy, America Online, and more.

In 1991 the US High Performance Computing Act established the basis for the National Research and Education Network (NREN) (December, et al 1995). NREN's goals are to establish and maintain high-speed, high-capacity research and education networks, while helping to develop a commercial presence on the Internet.
Previously, if an organisation wanted to become a member of the Internet, it had to seek sponsorship from a US government agency. In 1990, the Federal Networking Council dropped the requirement, allowing any organisation to apply for membership without justifying the connection.

In 1990 and 1991, new ways to provide information on the Internet, such as the Wide Area Information Servers (WAIS), Gopher, and World Wide Web (WWW), emerged (December, et al. 1995). These systems enable many Internet users to easily make information accessible on the Net (an informal term for the Internet). Meanwhile, tools, such as Archie, Veronica, and Jughead came out to help people search for information. The first major electronic hypertext guide to Internet resources - Hytelnet - became available at the end of 1990. Since then, several of the earlier guides have been discontinued.

In 1992, the National Science Foundation (NSF) made the Acceptable-Use Policy (AUP), which was ambiguous about using the Internet commercially (Kelly 1994). The AUP suggested that any firm sending an advertisement over NSFnet was engaged in unacceptable use of the network. On the other hand, the AUP allowed use by for-profit organisations "engaged in open scholarly communication and research" (Kelly 1994, p 28). These limitations outlined by the AUP applied only to traffic from the NSF, which meant that users could use the Internet to do anything at will. With the implementation of the network, most of the old assumptions about Acceptable Use came under scrutiny. It is inconceivable that current AUPs would continue to curtail

commercial activities. The AUP has changed somewhat, but more importantly the Internet has taken on different forms and different policies. Although it's not actually stated anywhere, commercial activity is now very much accepted on the Internet (December, et al 1995).

What is more, the collapsing of communism in Eastern Europe in the early 1990s broke down many political barriers. The fear of nuclear war for which the networks was set up originally is not as relevant as before. With the maturing of networking technology, using the Internet commercially became possible, offering great trading opportunities.

2.2 Development of Socialisation on the Internet

Many tools for information gathering have been created before the World Wide Web, these include e-mail, Usenet, FTP, Telnet, Archie, Gopher, Veronica, WAIS, and more. The basic commands for e-mail, Telnet, FTP, Archie, WAIS, etc., are powerful but non-intuitive, which means that their interfaces are not-so-friendly. Now that the Internet has emerged as a huge, rich source of information, there is a strong need for effective search tools. The rapid growth of the Internet's user base has resulted in an increasing number of users who have neither the patience nor the desire to learn the intricacies of cumbersome interfaces. Easier systems can result in greater productivity. The World Wide Web hyperlinked, graphical user interface is just such a tool.

The World Wide Web (WWW) refers to all the documents on all Web servers world-wide. In a broader sense, the Web can be used to refer to all accessible hypertext-linked documents (December, et al 1995). And each of which displays on the screen a visible link to at least one other document in the set.

In March 1989, Tim Berners-Lee of Geneva's European Particle Physics Laboratory (CERN, base on the laboratory's French name) circulated a proposal to develop a

"hypertext system" for the purpose of enabling efficient and easy information-sharing among geographically separated teams of researchers in the High Energy Physics community (December, et al 1995).

The three important components of the proposed system were the following (December, et al 1995):

- A consistent user interface,
- The ability to incorporate a wide range of technologies and document types,
- Its "universal readership," that is, anyone sitting anywhere on the network, on a wide variety of different computer, could read the same document as anyone else, and could do so easily.

Over a year later, in October 1990, the project was presented anew, and two months later the World Wide Web project began to take shape. By early 1994, the Web/Mosaic combination had begun to attract the sort of media hype that can both make and break a technology.

The basic difference between these principles and those of the original WWW project is that they are not specifically aimed at one research community, but actively encourage commercial support and development (December, et al 1995).

The concept of hypertext is simple: Use the computer's storage and searching capacity to link documents together and thus enable users to jump instantly from one piece of information to the next. In a hypertext computer environment, selecting a link in one document moves users directly to the other. With hypertext, each of the series of documents displaying on the screen is a visible link to at least one other document in the set. The link is usually highlighted. The user "navigates" through a hypertext by selecting these links by using either the keyboard or the mouse. The link

leads to anther document, which in turn offers links to additional documents, and so on.

The World Wide Web is based on a combination of HyperText Markup Language (HTML) and the Universal Resource Locater (URL). Any text can be quickly coded in a word processor or a specialist HTML processor by the addition of HTML pointers, markers and style tags. This information is later used by the user's WWW software to interpret layout, style and to make internal and external links. URL addresses enable HTML to link to any available resource around the Internet. The Web contains the technologies necessary to give the Internet a pretty face. Web browsers that take full advantage of these technologies make the Internet easier to use. The WWW offers the Internet to the masses. No longer do people have to master the vagaries of FTP and Archie and WAIS searching, and as the Web develops it will fully incorporate e-mail, newsgroups, Telneting, and other technologies.

Businesses started utilising the Web purposes such as marketing, customer service, product information, and ordering. Today, commercial activity on the Web has increased to the point where new companies are adding Web pages daily. Business activity on the Web is exploding. Already, the Web has begun to change the face of marketing, customer service, business transactions, education, travel, publishing, information dissemination, and collaborative research (http://www.yahoo.com/Business_and_Economy 2 June 1996).

2.3 Development of Commercialisation on the Internet

In January 1993, the US National Center for Supercomputing Applications (NCSA) introduced Mosaic, a Web browser. Almost immediately it became the most popular software of its kind (Banaghan 17 June 1996). Because that documents can be linked everywhere on the Internet, there are no geographic bounds. Now the whole globe is one marketplace.

The Web grew exponentially when business started to enjoy the ability to connect worldwide over the one network, thereby offsetting costs, with content becoming more relevant to the general public. The free distribution of standards and software brought about soaring growth in the Web throughout 1994 and 1995 (Banaghan 17 June 1996).

In early 1996, The US Congress rewrote the US' telecom laws into a new, far-reaching bill, aimed at giving consumers a wider choice for cable TV and local and long-distance telephone services (Bhawani March 1996). Significantly, the new bill allows broadcast and telephone companies to move into each other's businesses. It also includes controversial provisions to curb indecency on the Internet and other mass media.

In February 1996, President Clinton signed the sweeping Telecommunications Act of 1996, ending government rules that have maintained barriers between local and long-distance calling, cable TV, broadcasting, and wireless services (Arnst, et al 8 April 1996). The short-term effect was to unleash a frenzy of restructurings, mergers, and deal making. From all this deal making will emerge a new crop of super-carrier companies that either on their own or through alliances will offer a full menu of electronic communications, a telebazaar with everything from video phones to Internet services to a single phone number that will follow people wherever they go.

In early 1995 it was estimated that there were 22 million Internet users in the US. Its revised estimate was 10 million. Current estimates of the number of users in Australia range from 500,000 to more than one million. Some estimates see that a new World Wide Web site is opened every minute that there are 30 million users and 50 million Web pages now as it is said (Banagha 17 June 1996, p 51).

The newly developed activities were so intense that in a New Yorker cartoon, they describe "... two dogs can connect each other on the Internet and nobody would recognise they are dogs." (Kelly 1994, p 741)

The Internet has changed so much, in fact, that during the first half of 1994 the number of domain names for commercial organisations (the comma domain) overtook those for educational institutes (the de domain). In the month ending June 25, more than 1,300 new commercial (comma) names were registered with the Internet, and the following month saw an additional 1,700. That's a 30% jump in one month. By January 1995, the number of commercial domains had risen past 30,000, with a monthly growth rate of over 10% (December, et al 1995, p 12).

For business, computing and networking technology is quickly becoming an absolute necessity. Computers are already populating many offices by providing tools such as word processors, data bases, and spreadsheets. Networking technology is racing towards a future of instant global communication. Using the Internet commercially is the fastest growing activity on the Internet, says David Cole, former CEO of Ashton-Tate Corp., a PC software pioneer and now an Internet entrepreneur, "I haven't seen this much excitement since the early days of the PC industry in 1981," (Verity 14 November 1994).

Even the most conservative decision makers in business are acknowledging that a remarkable shift is occurring in how people choose to entertain and educate themselves, and how they shop and conduct business, and in many emerging markets, the global network of networks that forms the Internet is rapidly encroaching on established means of communications - from the TV to the telephone. "The Internet is clearly emerging as the new mass medium." (Plunkett 19 August 1996, p 44)

Companies are now eager to play a role on the Internet, ranging from AT&T down to tiny operations. The commercial power users of the Internet are in a broad scope of industries, including high-technology manufacturers, computer-related industries, oil companies, pharmaceutical companies, health-related industries, financial services, and banks (Kelly 1994, p 727).

Many small companies and individual entrepreneurs use the Internet through inexpensive access service providers. In fact, access services have increased and expanded rapidly in the last year (Kelly 1994). They provide a full range of Internet services to individuals, small and medium-sized businesses.

The Internet revolution has induced millions of global citizens to wander through cyberspace. While technical people can go straight to the Internet, executives, professionals, and small-businesses owners are turning to the user-friendly online services as a pathway to the Internet.

Originally, the Internet's main goal was to provide data services to education and research, particularly research for the public good - medical, defence, and so forth. Now the mid-level networks have started out as service providers to the educational sectors that were originally non-profit entities. Commercial entities are offered lower-level services by these same mid-level providers. It is these networks that are providing much of the Internet access for businesses (Kelly 1994).

In 1993, the United States government funded the Internet Network Information Center (InterNIC) to help user Internet access and information gathering. Now people are talking about a world where distance doesn't matter any more. With the Internet, the whole globe is one marketplace. Organisations can reach everywhere through the Internet. Louis V. Gerstner Jr., IBM's CEO, even described that: "In 21st century business, networks would become the lifeblood of corporations and the principle means of commerce. Eventually, electronic commerce will extend to home shopping and other consumer transactions too" (Sager 30 October 1996, p 40). Current business activities show that the Internet is no longer just a tool for circles of education and research. Business activities are taking more and more important positions on the Internet.

A report from Forrester Research Inc., a market researcher in Cambridge, says that the Internet access market will grow from $123 million in 1996 to more than $4 billion in

2000 (Sager 5 June 1995, p 55). The numbers not only reflect organisation casual activities on the Internet, but also reflect organisations expectations future usage of the Internet, which means that organisations have realised and confirmed the validity of the Internet for their businesses.

2.4 A New Way of Doing Business

There are various definitions of the Internet. Some typical definitions are:

> *The Internet can be thought about in relation to its common protocols, as a physical collection of routers and circuits, as a set of shared resources. or even as an attitude about interconnecting and intercommunication (Krol 1993, p 4).*

> *The Internet is a conglomeration of thousands of computer networks utilising a common set of technical protocols to create a worldwide communications medium (Shah 23 August 1995, p 1).*

> *The Internet is a global system of networked computers that allows user-to-user communication and transfer of data files from one machine to any other on the network (John December, et al 1995, p 6).*

These three definitions of the Internet represent characteristics defined from different perspectives. The first definition was written when many business users were first becoming aware of the Internet. This definition paid attention mainly to the physical links, which regarded business transactions as many other normal transactions similarly the protocols, the routers, and the circuits were focused on internal communications. Business didn't even make a mention. Definitions and thoughts at that time were technical in nature with connectivity the main issue.

The second definition was coined at a time when the Internet was becoming very popular. It emphasises the worldwide convergence of networks, admitting that the Internet is a communications medium, with the implication that the Internet could be used as a new business tool.

The third relates to the World Wide Web as an information resource. With the Web, worldwide databases are linked as one network. This definition indicates that the Internet is not only a global network, but a freeing up of systems for user-to-user and machine-to-machine interaction. On the Internet, many users can transfer data, seek information and publish their own information. This has opened the door for businesses to interact anywhere and at anytime.

It is the nature of business to seek fast and accurate information, communicate with remote customers, and seek new business opportunities worldwide. These characteristics relate to the demands of business development. In the modern competitive environment, to achieve business goals, many organisations are seriously considering the Internet for their business.

Until recently, the Internet access market has been wide-open to just about anyone setting up shop. All a user has to do is to get an Internet node, a simple engineering workstation, with a few modems, arrange a link with a regional or national segment of the Internet, and the user is operational as an Internet server. Today, hundreds of companies buy Internet capacity in bulk and resell in smaller chunks, similar to so-called aggregators in the long-distance phone market (Sager 5 June 1995, p 55).

Generally, the Internet widens business scope, speeds business processes, and offers business new tools. The main features of these tools include (Kelly 1994, p 733-740):

(1) Global communications

The Internet offers a business the opportunity for rapid communications with people and organisations across the globe, enlarging the visibility of a

business a thousandfold. Due to inexpensive access, the Internet is connecting even small, rural industries. Good communications enable more global corporate management control, aiding in consistency of results. Companies can be in touch with suppliers, branches, and subsidiaries in an effort to exert more control over variables. Companies can establish, negotiate, and maintain standards online.

(2) Rich information resource

Corporations need up-to-date information of all kinds, and many businesses rely on scientific and/or governmental information for their operations. This information abounds on the Internet in sites all over the world. On the Internet, people usually speak for themselves, rather than from stations of rank, title, or status. This conduct makes the network a rich environment for the exchange of information. Because of the diversity, users can find material and ideas that may stretch or challenge their own ideas.

(3) Strong competition

The ability to have the latest information about a marketplace and awareness of the state-of-the-art in industry allows users to keep competitive edge. Learning what other companies are doing, knowing the kinds of information available, and discovering new markets can assist a company in maintaining a competitive vantage. The Internet is a two-way knowledge conduit, versus the one-way knowledge conduit of video or paper-based publications. The exchange of public information is crucial for meeting the needs of customers, business partners, and collaborators, as well as the general public. People can join existing conversations in the form of discussion lists focusing on marketing, accounting, public relations, and so on. Even they can open their own discussions on the Internet. Companies can use the Internet to search for successful practices of corporate and product improvement.

In particular, the Internet establishes new relationships between business and customers, business with suppliers, business with collaborators, and rivals (Kelly 1994, p 733-740):

(1) Focused marketing research

Companies can use the Internet for marketing services and products. By observing Internet activities and participating in discussions, companies can create a sharper marketing focus for themselves. Businesses can carry out marketing research online, create and support actual sales distribution channels, search demands of customers, understand the actions from rivals, while setting up its own image in the world.

(2) Efficient customer services

Because the Internet is the anywhere-anytime network, employees, suppliers, customers, and others can keep in touch more efficiently. Businesses can maintain communications by the way in which both parties do not need to be online or in the same place at one time; rather, parties can exchange mail and information across time and distance freely. With discussions on the Internet, a user can read or post messages any time, and new people can join in, depending on their knowledge and interest. Information can be processed, stored, forwarded, and retrieved at user's convenience.

(3) Virtual collaboration and development

The Internet facilitates the collaboration for product design, open vendor communication channels, research and development. The Internet can be maintained by companies, organisations, government units, or collaborative arrangements to comply with government rules, regulations, executive orders, or laws. Businesses using the Internet can build internal and external links, creating a virtual community.

(4) Extended vendor support and networking

With its global scope, the Internet can help businesses locate new suppliers and keep in better touch with them. In addition, small suppliers are able to network with and compete with larger, more well known suppliers. The Internet even assists companies to maintain zero inventory systems due to the speed of communications.

The Internet is growing so rapidly that estimates of the "size of the Internet" are obsolete long before they can be published. However, one thing is sure that the Internet is one of the most successful large-scale distributed systems businesses ever undertaken. The degree of development was clearly not anticipated by the original architects of the Internet. The Internet is not likely to replace many existing businesses in the world, but it will certainly add to the potential means of conducting global and local commerce.

2.5 Intentions of Organisations on the Internet

To achieve its promise, the Internet must be worth using, Internet services allow many businesses to reach international markets immediately and inexpensively. Companies can build their brands and "connect" with customers in more direct and individual ways.

There are many examples of the growing interest of businesses in using the Internet as a business tool.

Case 1. The Computer Reseller News Magazine reported, in February 1996, resellers expect booming sales of Internet-related software in the coming months. 91% of resellers felt that sales world rise at least 6% in just the next three months. Two-thirds of those felt that sales growth world exceed 10%. If this pace were maintained for a full year, annual sales growth world exceed 40% (Robers 18 March 1996).

Case 2. The Australian men's wear retailer Lowes is not waiting for secure transaction technology to be available, and has started selling online. During its first week, with minimal marketing of its site, Lowes attained 25,000 "hits" and six purchases. The transactions are not secured, but as associate director Tony Standley says: "We offer the same level of security as Myer Direct." In Myer, the well-known department store, people fax in or communicate their credit card details over the phone. In this way, Myer is making a lot of sales. On the Internet, sales can be done more quickly, and a clear warning sign will come up on the computer screen before purchasing to let a customer cancel if he is worried. Tony says that because of the low costs associated with electronic commerce, prices in the Lowes Internet shop will be lower than those in retail stores (Banaghan 17 June 1996, p56).

Case 3. After a year and a half of testing, General Electric (GE) has started to move its purchasing activities to the Internet. In June, it went live with a setup called the Trading Process Network, which helps match buyers throughout the company with suppliers of everything from refrigerator handles to printer paper. GE expects to purchase at least $1 billion worth of its goods this way in 1996, and 50% of the total by 2000. The payoff, according to Orvile A. Bailey, manager of purchasing and supplier productivity solutions, is that GE can select from a broader base of suppliers as well as cut its purchasing costs. The setup will help GE, already famous for getting price concessions from suppliers, to drive an even harder bargain by pooling orders from across its units and winning higher volume discounts (Smart 5 August 1996, p 41)

Case 4. Hale and Dorr, a Boston-based law firm which is a technologically sophisticated law firm, spends, in technology, a total of $2 million to $3 million annually. After setting up a home page on the Internet, revenues per lawyer were $460,000 in 1995. It was just $250,000 in 1987 (Mike, et al 18 April 1996).

Case 5. One year ago, Europe seemed so uninterested in the Internet that it risked falling light-years behind market developments in the US. Suddenly, though, Europe is awakening to the Internet and its vast commercial potential was warp speed. Business all across the Continent are racing to get wired and to flood the Internet with new services. Some Northern European countries are moving so rapidly that they may serve as test sites for 21st-century cyber-business. Indeed, the number of European computers linked to the Web will grow from 4.2 million last year to 9.6 million by the end of 1996. Business is the driving force behind the changes (Edmondson, et al 26 August 1996, p18)

The cases illustrate that:

(1) Software companies were the early areas of the Internet for business purpose. What they are talking about is not how to access the Internet, or how to get information from the Internet, or how to set up home pages on the Internet, but how to make money from the Internet. In fact, selling software on the Internet has been one of the most successful businesses on the Internet.

(2) General businesses have started thinking of obtaining real benefits from the Internet, and are not just satisfied with node access to the Internet. Companies like Australian men's wear retailer Lowes have promoted selling online, even though there were only 25,000 "hits" and six purchases during their first week of business. Lowes hasn't just jumped onto the Internet bandwagon. They considered many of the problems, such as credit card fraud along with the benefits, such as low cost electronic commerce, and on balance were very positive about using the Internet for business transactions.

(3) More and more organisations are joining the Internet, including traditionally conservative law firms, banks, financial institutions, and others. As Louis V. Gerstner Jr., IBM's CEO, says: "The Internet or networked world will put extreme pressure on traditional providers of financial services.

We have no interest in going into the banking business. But we do have an interest in working with a series of banks in which we will provide networking capability through the IBM Global Network and networking applications that we will build." (Sager 30 October 1995, p 49) These organisations cover a wide area, including the US, Australia, Europe, and Asian countries. This illustrates the scope of types of organisations on the Internet is growing.

(4) Some companies' Internet activities have been tested, studied and planned before going onto the Internet. General Electric (GE) have tested for a year and a half, and only began then to move its purchasing activities onto the Internet.

(5) The trading items are various, including items as trivial as refrigerator handles, printer paper, etc. When organisations do business without using the Internet, they have to consider price, security, cost, suppliers' selection, etc. Now doing business with the Internet, these business procedures still have to be considered, but not to the same extent. The Internet offers a more effective delivery service to organisations.

To become a good player in the dawning world of networked computing and electronic commerce, communications is the key. Organisations have become so active on the Internet that even their executives are attracted, even though this may be for curiosity value only. Franklin Collins, one of the largest Internet training companies in the US, reports solid growth in its introductory courses, particularly in enrollments of executives. The company's chief executive, Bruce Grant, says: "By far the main uptake of our courses has been non-IT company executives wanting to gain Internet knowledge fast." (Banaghan 17 June 1996, p 51).

There are many other similar cases. These cases indicate that organisations have turned from going onto the Internet by just setting up a node to doing something to

attain real commercial benefits from the Internet. "It is said, if the first generation of computer profits came from hardware, and the second from system software, the third will be from the Internet." (Kawasake, et al 18 December 1995, p 280).

2.6 Organisations and Business Activities on the Internet

With the mad rush to do Internet business, it is not surprising that much of the activity is unstructured and ad hoc. There are many commercial opportunities for business on the Internet. On the other hand, it is its "anarchical" nature that makes it difficult to establish, and control business activities.

Many categories of business activity are not clearly defined on the Internet. Business organisations using the Internet come from a broad scope of industries, including computer-related industries, oil companies, pharmaceutical companies, health case-related industries, financial services, banks, and so on (http://www.yahoo.com/Business_and_Economy 2 June 1997). A method to make the search easier is to use pre-defined sub-categories. These sub-categories have arisen in an ad hoc fashion and are loosely based on the general usage of the Internet/World Wide Web. No uniform categories are based on business theory. It appears that as long as there is access, any organisation can be part of the Internet revolution.

Categories as they exist on the Internet are best illustrated by an analysis of Internet search engine categories.

According to Yahoo, one of the most popular Internet search engines, the total number of organisations on the Internet on 2, July 1996 was 85091 within 112 categories (http://www.yahoo.com/Business_and_Economy/Companies 2 June 1996). This list can be divided into three groups: the maximum number of companies to the 10th most number of companies, the middle range from the 51st to 60th, the bottom range from the 100th to the minimum amount of companies.

On yahoo.com (2/6/1996) the numbers of companies are listed below.

Range	Numbers	Percent
1-10	42351	50%
51-60	3045	4%
100-112	151	0.18%

Figure 2.1

In the top range, dominating organisations were services for recreation such as music, books, travel, arts and crafts, sports, etc. Among the top range companies, computer companies were 18367 in number, financial services 3824 and Internet Services 3238 (25% of the total).

In the middle range, starting from companies of information to aerospace, companies labelled high-technology, such as information aviation, biomedical, aerospace, and companies related to basic economy, such as agriculture, energy, and transportation, are very noticeable.

In the bottom range, the bulk of the organisations appear to be services or relatively lower technology companies.

The numbers of organisations on the Internet was got from the Yahoo in Business and Economy sector. The category of organisations is based on the selection of Yahoo its own. An example is shown below.

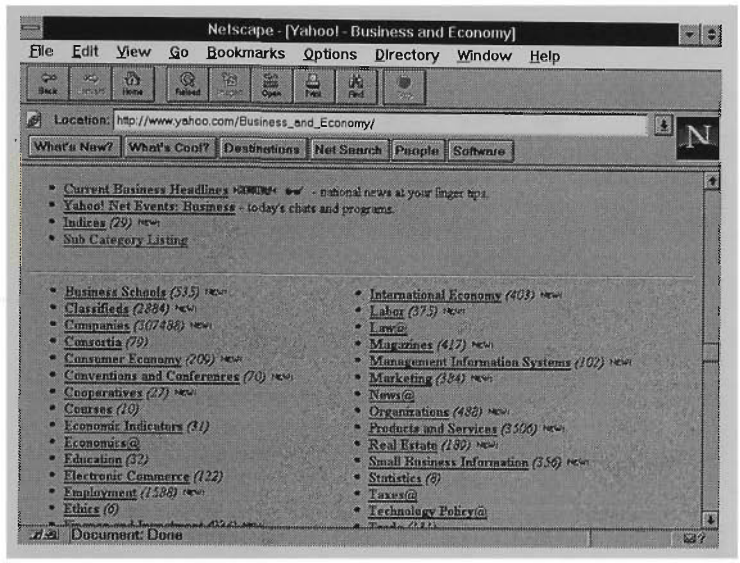

Figure 2.2

However, the other search engines have a different set of categories, such as those in excite, Infoseek, Lycos, etc (http://www.nestscape.com/home/internt-directory.html 17 March 1997).

Lycos is a trademark of Carnegie Mellon University. It contains 11 million regular users and a worldwide distribution channel. It is one of top 3 Web sites anywhere on the Internet. The business categories in Lycos are listed below.

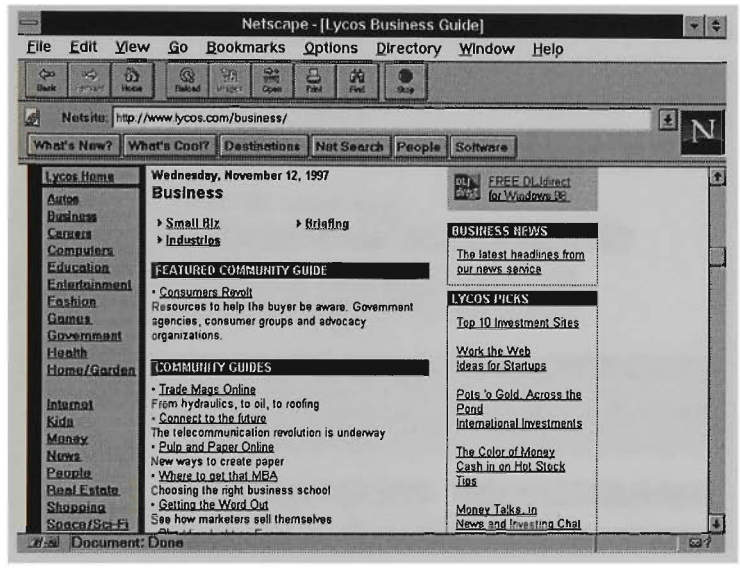

Figure 2.3

Excite is owned by Excite Inc. It contains 50 million Web pages, 60,000 categorised Web site reviews, and thousands of recent Usenet postings. The business sector on the Excite is shown below.

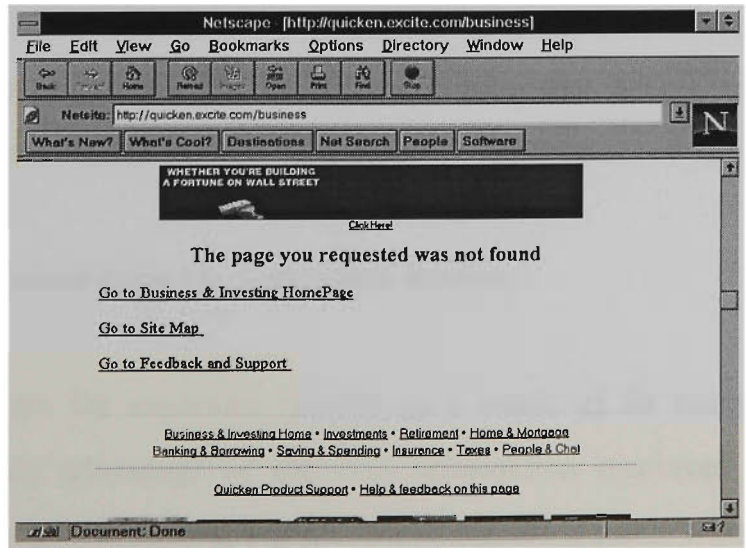

Figure 2.4

Infoseek is home page of Infoseek Corporation. Infoseek's search and news services are among the most popular information search services available on the Internet, processing millions of information requests a day. The business category in Infoseek is listed below.

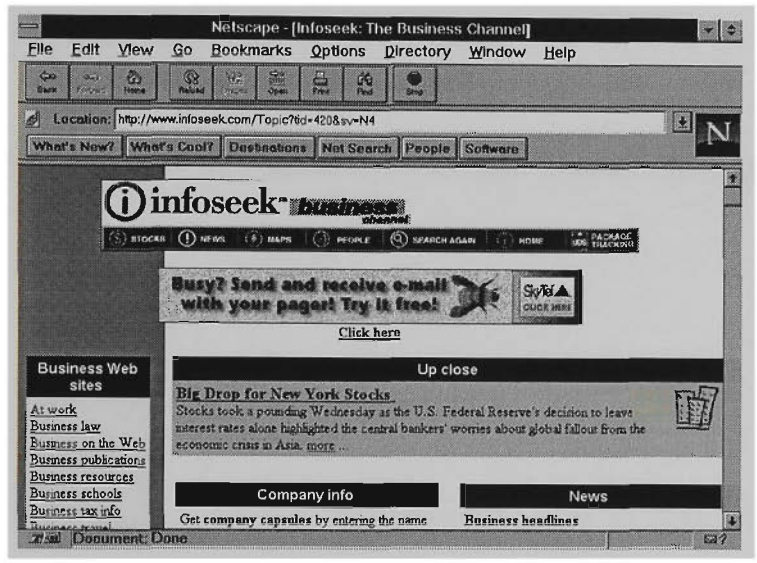

Figure 2.5

Those are just a portion of the many catalogues available on the Internet. There are also various Internet search engines and services, which display various categories. Using the existing categories on the Internet leads to a variety of results. It is as Mr. Willis, an ordinary keen player of the Internet, says that advertising a business on the Internet has been a bit like printing thousands of brochures, dumping them on the corner of Swanston and Bourke streets and hoping that people will pick them up (Saunders 19 April 1996).

2.7 Questions Raised from the Literature Review

The Internet is set for explosive growth as a result of its untapped commercial potential. Taking advantage of the rich information resources on the Internet, commercial ventures are finding a place in cyberspace, a place where they can reach customers, promote their products, and provide information to others.

However, to what extent this is happening is unclear at this stage. Questions with regards to this, such as:

- What types of organisation are doing business on the Internet?
- What types of business transaction are being carried on the Internet?
- How are these evolving over time?

come to mind. The basis for this thesis is to attempt to resolve, empirically, some of these questions.

3. Aim

New technologies such as the Internet offer new opportunities for business. For most businesses, the Internet can open up another new global marketplace.

In the past two years, many organizations and individuals have become aware of the Internet, with a large number of organizations posting information based World Wide Web sites (Hayes 9 September 1996). Now, many forward-thinking organizations are pushing Internet technology further by making it a critical part of their business operations. Many organizations are building various forms of Internet to exploit the advantages of communications on the Internet, creating important links between the Internet and vital business applications, and exploring ways to conduct business-to-business transactions over the Internet. Many organizations are finding that the Internet can help improve communications among their divisions scattered throughout the world. The commercial use of the Internet is just the beginning of a technical revolution - one that a business must join if it is to survive (Ryan 1996).

The move towards converging traditional research and new business provides organizations with the opportunity to assess what the Internet can do for business. Information systems managers leverage the Internet as a global strategic information systems tool. As Prakash, an author in Information Technology, said, "The global nature of the Internet, its low cost of access and its composite set of services make it an ideal tool. In an age when sophisticated communications and computers provide organizations with a new information-based universe, the overriding objective should be a total commitment to advancing the frontiers of business." (Prakash 1996, p 42)

The Internet is aimed toward supporting this objective. It is not unusual that a quick scan of the Internet indicates that there are thousands of organisations within just one category. There now appears to be a long-term commitment to electronic commerce that is conducting transactions across data networks, both business-to-business and

business-to-consumer. Internet developers - hardware vendors, software developers, networking equipment manufacturers, content creators and service providers - are ready to take the plunge. It is predicted that the Internet will become more popular when the key technologies finally reach a critical mass (McCarthy 15 January 1996).

Businesses need to have some quick, easily obtained methods for determining the value of their Internet presence. It wass the mission of this thesis to track the change of the organisations and their Internet activities over the recently past.

The specific purposes of this thesis was to survey:

1) what types of organisations are doing business on the Internet,
2) what actions they are undertaking,
3) how these organisation types and actions are evolving over time.

The thesis undertook a systematic study of doing business on the Internet, showed a snapshot of organisations doing business on the Internet, and tracked their commercial usage of the Internet over time.

4. Methodology

4.1 Tools Used in the Thesis

At present, millions of pieces of information are available on the Internet in a variety of formats. The network is growing so fast that methods of finding information have quickly become obsolete. The quickly changing nature of the Internet means that the tools used must be the ones which can allow users to get information accurately, relevantly, conveniently, at the least cost and at the least amount of time.

(1) Using Netscape as the Browser

A WWW browser is a piece of software, which is also known as a World Wide Web client. It is the browser's task to display WWW documents and allow the selection of hyperlinks by the user. Different front ends to the Web will compete for user's attention. Currently there are a lot of Web browsers, but the principle will remain the same. Link the information, let the users follow whatever path they choose, and when they reach their destination, let them do with the information whatever they please.

The commercial browsers have been released and are increasingly available. There are browsers for UNIX clients, Apple Macintosh clients, Microsoft Windows clients, and other platforms. The browsers can be further divided as text mode or graphical mode. A few browsers exist that require only text-based display, the most popular of which is the UNIX program Lynx. Most, however, run atop graphical user interfaces, such as X Window, Macintosh, Microsoft Windows, and NeXTStep. The most popular browser released to date is Netscape (December, et al 1995).

Netscape exist for the three most important platforms: XWindows, the Apple Macintosh, and Microsoft Windows, which is almost sufficient to explain their

popularity. Some have even used the label "killer app" for Netscape, the immensely popular program (December, et al 1995)

Netscape brought with it two important factors. First, it was easy to use, and easy to configure. Second, it was designed by the same person and team who designed Mosaic, a previous graphical Web browser, giving it instant credibility.

Netscape took the Web several steps further. Modem users finally have a product that obviously dealt with their slower access problems. HTML authors saw the browser as an opportunity to design pages with much greater sophistication. And Web surfers saw these designs grow increasing impressive by the week, reaching the point when all pages on the Web finally stopped looking alike. Netscape turned into a design arena, and suddenly Web publishing took on a different dimension. In the process, it added greater capability to read and post newsgroups, a somewhat better connection to e-mail, and stronger support for other Internet function such as Gopher and FTP.

(2) Using hyperlink as the information location method

It is not easy to find the information people are looking for, although there are plenty of facilities available on the Internet. Some tools do not cover everything within their domain. Others attempt to cover everything, but do not provide fine grain searching. Today, all information location methods exist in parallel. Each method has its strengths and weaknesses, but all are useful in their own way. The different information location methods are: serendipity, resource guide, browsing, searching, and hypertext (December, et al 1995, p434).

Serendipity is the original method of finding information on the Internet because at that time no better tools existed. Serendipity means discovery by accident. It can never predict what he is going to find or when he is going to find it using serendipity. Worse, a user will not find what he is looking for at all.

Later when the Internet developed a bit further, resource guides came out to help people find information. Usually resource guides were formatted as lists, menus, numbers, and the like. In the past, a user even had to use serendipity to find resource guides. Now resource guides of resource guides are available still in a more sophisticated form.

Browsing is similar to walking into the library or bookstore and directly perusing the shelves. A user can start at Science Fiction, but eventually end up scanning the shelves in the Philosophy section. In this way, a user could have more selections on the Internet as he wishes.

Searching is the same as looking at an index or a card catalogue. On the Internet, searching usually works by picking a searching tool and then entering some keywords to search for.

Hypertext might be thought of as a special form of browsing. Browsing is usually a menu-driven system. In a hypertext document, words, phrases, or even pictures contain links to another document. Hypertext is just a more advanced electronic form of browser.

Before the development of search mechanisms, the Web was a tangle of links, branching and forking, an inscrutable mesh. To find resources, users of the Web had to use hand-crafted lists and indexes, which were not always reliable, current, or complete. The situation now is ripe for the development of automated mechanisms to index the Web's information spaces. The searching mechanisms on the Web are more varied and complex than those for FTP and Gopher, and the variety of searching tools and resources, which gives a user a range of more effective ways to search for resources that the user wants (Kelly 1994).

The searching methods can be like that: making use of hierarchically-arranged subject catalogues and tree, utilising keywords, using lists servers in information

spaces via lists of Web sites arranged by geography, and searching directories of people in home page. A user can search by hyperlink, which is to utilise techniques, resources, and tools to help locate new or unusual Web information.

(3) Using AltaVista as the search engine

A search engine is a form of Internet software. It allows a user to create queries that "search" the Internet for documents that are related to the search query.

The need for searching tools to access the World Wide Web is increasing as the Web itself continues its explosive growth. Link www.100hot.com is copyrighted by Web21, which was the first online service to rank the top 100 Web sites by the number of hits and links. Today, the 100hot Web Sites is one of the most popular guides to the hottest content of the World Wide Web (http://www.net101.com 11 January 1997). It compiles this objective, complete listing of the top 100 Web sites by analysing Web traffic at strategic points on the Internet.

There are various search engines on the Web, and they change all the time. Users can never get the same set of search engines over a period of time.

During the period that the thesis was surveying, the first 10 popular Web search engines were: Yahoo, PathFinder, America Online and WebCrawler, GeoCities, ESPNet Sportszone, Ziff Davis and HotFiles, Real.com and Timecast, AltaVista, Excite, and Disney Entertainment (http://www.100hot.com 11 January 1997).

Within the Web directory community, Yahoo is a well known search engine even though it was developed by a pair of Stanford University students in April 1994. Yahoo offers a global Internet navigational service of information on the Web. Yahoo is a very large collection of Web links arranged into a hierarchical hotlist. Yahoo is a very useful index to Web documents. However, Yahoo asks business people to register for its service.

On the other hand, AltaVista is established by Digital Equipment Corporation (DEC). It provides access to the largest Web index of about 30 million pages found on 225,000 servers, and three million articles from 14,000 Usenet news groups. It is accessed over 12 million times per weekday (http://altavista.digital.com 31 May 1996). And AltaVista does not ask business people to register for its service. Therefore, AltaVista has links to a greater number of business organisations.

The thesis needs large amounts of data from the Internet. It requires that the data be selected under proper categories, cover a larger scope of organisations and business activities, and is up-to-date. The AltaVista Web-wide search engine accessing huge frequently updated database resources, and integrated with the Yahoo search engine is an appropriate choice as a research tool.

4.2 Classified Category Methodology of Organisation Types

Doing business on the Internet is a recent phenomenon. There is no unified method for classifying the types of organisations doing business on the Internet. To obtain a general picture of the types of organisations doing business on the Internet, consideration has to be given to the types of organisations found in the general business world as a starting point.

Over the years, the Australian Bureau of Statistics (ABS) has expanded greatly the scope and sophistication of its classification systems and methods. The Australia and New Zealand Standard Industrial Classification (ANZSIC) has been produced by the publication of statistics in the two countries for the production and analysis of official industry statistics (Australian Bureau of Statistics August 1993). Australian statistical classifications are either integrated or closely aligned with international standards.

The ABS classification organisations could be grouped as follows:

Agriculture
Mining
Construction
Electricity, Gas, and Water Supply
Manufacturing
Accommodation, Cafes and Restaurant
Communication Services
Cultural and Recreation Services
Finance and Insurance
Personal and Other Services
Property and Business Services
Retail Trade
Wholesale Trade
Education
Government Administration and Defence
Health and Community Services

This method of classification from ANZSIC is close to basic economics theory. No matter what search engine is used, the various organisations can be set into relevant categories, with confidence that the basis of categorisation is supported by conventional business theory.

4.3 Management Theory Based Categories of Business Activities on the Internet

The physical system of an organisation is a closed-loop system in that it is controlled by management, using feedback information to ensured that the objectives are met. The organisation is also an open system in that it interfaces with its environment. An

organisation takes resources from its environment, transforms those resources into products and services, and returns the transformed resources to its environment.

There are eight environment elements, that have either a direct or indirect influence on the organisation. These elements are suppliers, customers, labour unions, financial community, stockholders, competitors, government, and local community. The organisation is connected to these environmental elements by means of resource flows. Not all resources flow between the organisations and all environment elements. The only resource that connects the organisation with all of the elements is information. Competitive advantage can be achieved by means of using information gain leverage in the marketplace.

Business firms traditionally have been organised in terms of the tasks, or functions, that are performed. Mainly, functional information systems (IS) in organisation are those of Marketing IS, Manufacturing IS, Financial IS, and Human Resource IS. The executive IS sits atop the functional systems (McLeod 1993).

Marketing managers have a variety of resources with which to work. The objective is to develop strategies that apply these resources to market the organisation's goods, services, and ideas. Once the decision has been made, it is the responsibility of the manufacturing function to produce the products to meet customers' wants and needs. The tasks of the Financial information system are to identify future money needs, assist in the acquisition of those funds, and control their use. Human resources perform recruiting and hiring, educating and training, managing employee related data, termination and benefit administration.

Therefore, the activities of organisations doing business on the Internet could be grouped as follows (McLeod 1993):

Marketing:

- Marketing Product
- Distribution
- Promotion
- Market Report
- Market Research
- Market Intelligence

Manufacturing:

- Product
- Quality
- Cost
- Job Report
- Industrial Engineering
- Manufacturing Intelligence

Finance:

- Financial Forecasting
- Funds Management
- Financial Control
- Accounting Report
- Internal Audit
- Financial Intelligence

Human Resources:

- Personnel Planning & Administration
- Compensation & Government Legislation

Recruiting & Benefits

Safety, Labour Relations, Payroll

Personal Records

Human Resources Research

Human Resources Intelligence

Many studies have been done in manufacturing, entertainment, federal agencies, software vendors, export, financing, marketing, advertising, banking, brokerage firms, medical services, to determine the activities in these areas. However, there are few studies concentrating systematically on organisations doing business on the Internet, and business activities on the Internet.

This thesis is trying to study the types of organisations, combined with their business transactions on the Internet.

4.4 The Steps of Research Methodology

The survey in this thesis is closely linked with the Internet. The steps to be used in searching organisations and their business transactions on the Internet are:

(1) Set up a two dimensional table

The thesis' task is to survey what organisation types and what business activities are on the Internet over period. The organisation types and business activities can be combined to establish a two dimensional table.

A portion of the table is shown below.

	Agriculture	Mining	...
Marketing: Marketing Product			
Distribution			
Promotion			
Market Report			
Market Research			
Market Intelligence			
Manufacturing: Product			
Inventory			
Quality			
Cost			
Job Report			
Industrial Engineering			
Manufacturing Intelligence			
Finance: Financial Forecasting			
Funds Management			
Financial Control			
Accounting Report			
Internal Audit			
Financial Intelligence			
Human Resource: Personnel Planning & Administration			
Compensation & Government Legislation			
Recruiting & Benefits			
Safety, Labour Relations. Payroll			
Personal Records			
Human Resources Research			
HR Intelligence			

Figure 4.1

(2) Set up queries

AltaVista ranks the results of queries based on a scoring algorithm, documents with a higher score appear at the head of the ranking list. Among hundreds of thousands of organisations on the Internet now, using the automatic database ranking on the Internet engine is a good way to get typical information about the current situation. Documents matching more of the keywords will have a higher rank than those matching less, documents matching words found in the Title are ranked higher than those found in its Body or Universal Resource Locator (URL), categories matching higher up in the AltaVista tree hierarchy are ranked higher than those deeper in the hierarchy. The thesis will use the AltaVista ranking methodology to obtain the relevant information about the mass organisations on the Internet in business fields.

The thesis will use the "rule of thumb" that if 80% of the results of a query fit the category cell, then the query is an accurate description of the cell category.

Queries could be set up by specifying keyword(s) based on the cells in the table. For example,

agriculture distribution
agriculture "market report"
mining product
mining "industrial engineering"

When there are two or more words that need to be put together, the words have to be circled with double quotes.

Data obtained directly from AltaVista will come out as whole number, such as 10000, 30000, 478000. Data obtained from AltaVista, but through Yahoo, the number will come out as real number, such as 10031, 34654. Since the later is

more precisely related to the real world, the queries will use the Yahoo query box, which always uses the AltaVista search engine. After the query is settled, it will be used to periodically gather time series numbers for each category. The data will be plotted for each cell over a period of 3 months initially on a fortnightly basis. The time series dates are: 2/12/1996, 16/12/1996, 30/12/1996, 13/1/1997, 27/1/1997, and 10/2/1997.

(3) Start searching

Open the Yahoo page first, then select the portion aside the query box, select a search method on "Matches on all word (AND), select a search area on "Web Sites", and leave "Find only new listings added during the past 3 years" as it is.

The search options in Yahoo is shown below.

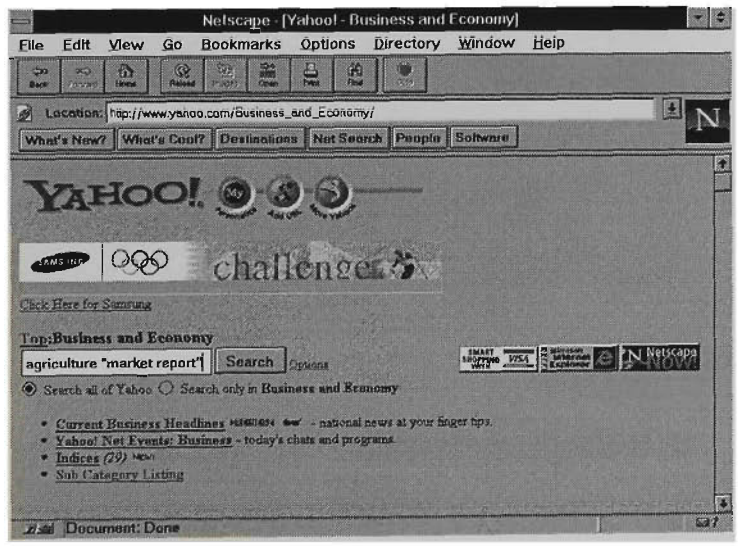

Figure 4.2

(4) Get the number of hits from the Internet

After clicked the search button, Yahoo will start searching its database for keyword matching. The first page returns a list of matching Yahoo Categories followed by a list of matching Yahoo Sites. If no matching Yahoo Categories and Sites are found, Yahoo will automatically perform a Web-wide, full-text document search using the AltaVista search engine. This study will always use the AltaVista search engine from Yahoo, and get the number of hits from there. An example is shown below.

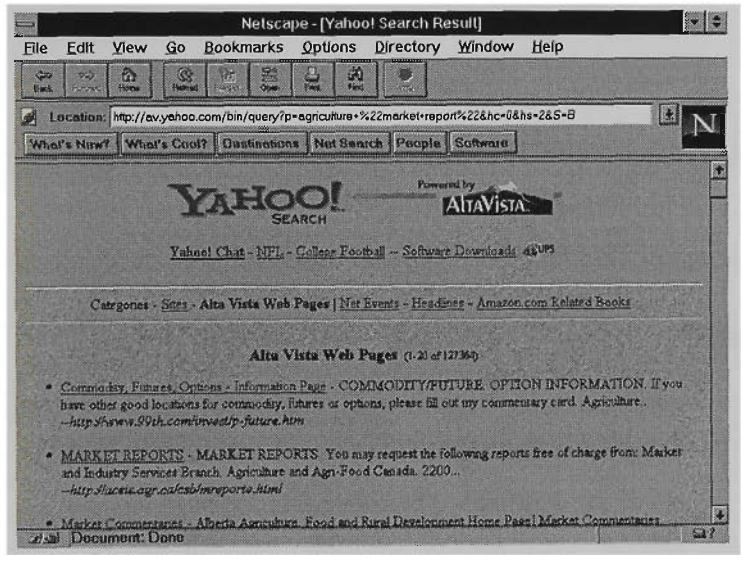

Figure 4.3

Summary of steps of getting data from the Internet is explained below.

- Getting original hits from the Internet,
- Making trend line charts based on the hits,
- Getting the equation numbers from the trend line charts,
- Setting up grade categories from the equation gradients using standard deviation and average number,
- Classifying the development rates from the grades.

With this methodology, what type of organisations and what business activities organisation are taking on the Internet a over certain period can be summarised in a

series of tables, which can offer insights into how organisations would be involved when considering developing business using the Internet.

4.5 The Steps of the Analysis

(1) Collect data of combined organisation types and business activities over a period

The survey is divided into four main areas: Marketing, Manufacturing, Financial, Human Resources, and 28 categories of organisation types. The survey data was collected on 2/12/96, 16/12/96, 30/12/96, 13/1/97, 27/1/97, 10/2/97, a fortnightly basis over twelve weeks.

A sample of the data is listed below. The remainder is found in Appendix A.

1. Agriculture						
Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	6824	7724	7894	8750	8780	8800
Place (distribution)	267005	267085	267340	721260	722210	722640
Promotion	265308	265648	265972	570110	571840	573270
Market Report	8706	8946	9299	22280	22300	22300
Market Research	40011	40810	43629	98230	98420	98600
Market Intelligence	7812	8062	8359	10890	10910	10930

Figure 4.4

(2) Make Trendline charts from the data

From this data plots of the hits shown above, Linear trendlines were then created for organisations and their business activities over a certain period, which fitted to each category. Normally trendlines are used to analyse problems of prediction. By using this analytical method, data can be extended in a chart forward or backward beyond the actual data to show a trend.

A sample of the Trendline chart is shown below:

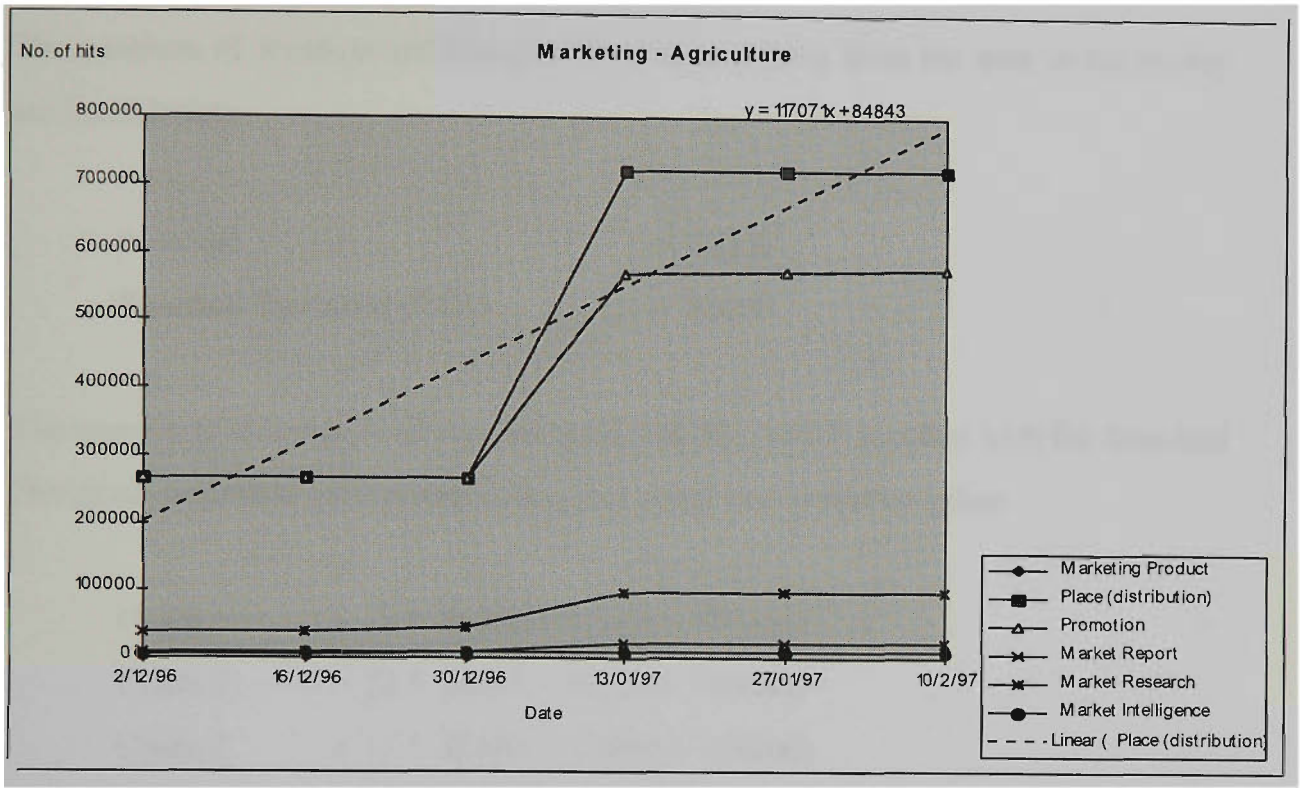

Figure 4.5

The linear calculates the least squares fit for a line represented by the following equation:

$$y = mx + b$$

where m is the slope and b is the intercept.

Having done that, the gradients of the Trendlines were then extracted. Here a positive number means an increasing rate, a negative number means a decreasing rate, and a zero trend gradient means steady state.

(3) Set up Grades

Using the gradient figures for all the categories, the mean and standard deviation of the gradients were calculated. The mean is the average trend gradient and measures central tendency. The standard deviation is a measure of how widely values are

dispersed from the mean. These data will give a relative measure of each category type's progressive rate over time.

The numbers of Average and Standard Deviation getting from the data in the survey are listed below.

Average	= 22000
Standard Deviation (S.D.)	= 86000

The number of Average is used as the mean number, which together with the Standard Deviation were then used to establish grade categories as shown below.

Grade 1:	> (3 * 86000 + 22000 = 280000)
Grade 2:	> (2 * 86000 + 22000 = 194000)
Grade 3:	> (1 * 86000 + 22000 = 108000)
Grade 4:	> 22000
Grade 5:	> (-1 * 86000 + 22000 = -64000)
Grade 6:	> (-2 * 86000 + 22000 = -150000)
Grade 7:	> (-3 * 86000 + 22000 = -236000)

The levels by which organisation types and their business activities are measured have been calculated by using ± multiples of the S. D. from the mean. The grade categories classifications are used to separate the activities into groups. The higher the grade grouping the greater the increase in relative activity over time and the greater the promise for this organisation type / business activity in terms of being a pointer for establishing a successful Internet presence. On the other hand the lower the grade grouping the less likelihood of being successful pointer.

(4) Analyse organisation types and their business activities based on the Grades

Having got the original data, the trendlines and the grades, this study examines two aspects:

- from the point of view in organisation types,
- from the point of view of business activities the organisations are undertaking on the Internet.

Since the grades are derived from the trendlines gradient, the numbers of trendlines gradient and the grades are put together, which are all in a descending order. Therefore, differences among organisation types and their business activities can be sorted out, so the organisations and their activities can be compared. Samples are shown below.

Example of sorting by organisations type:

Agriculture	Trend Gradient	Grade
...	...	...
...	...	4
Market Research	14868	5
Market Report	3458	5
Market Intelligence	762	5
...	...	...

Figure 4.6

Example of sorting by organisation activities:

Marketing Product	Trend Gradient	Grade
...	...	...
Health Service	1973	5
Other Service	1928	5
Personal Service	1485	5
...	...	...
...	...	...

Figure 4.7

From the trendlines gradient and grades, the study will sort out the organisations and their activities by looking over the marketing, manufacturing, financial and human resource as a whole. The study will then compare and analyse the performance of organisation types, and their activities on the Internet over time.

5. Results and Analysis

The analysis of the survey results is applied by sorting out organisation types and their business activities separately, then get different level of performance in organisation types, and compare the grades in activities. Therefore a dimensional picture along with time changing can be drawn out.

5.1 Marketing

Organisations seem to rush to set up their positions on the Internet that will list their products and the value-added services they perform. Some also link customers directly by Distribution, Market Research, and so on.

The survey in marketing on the Internet is listed follow.

Sorting by organisation types in marketing:

Agriculture	Trend Gradient	Grade
Distribution	117071	3
Promotion	78929	4
Market Research	14868	5
Market Report	3458	5
Market Intelligence	762	5
Marketing Product	397	5

Table 5.1.1

Mining	Trend Gradient	Grade
Promotion	53717	4
Market Research	12861	5
Market Report	4012	5
Market Intelligence	153	5
Marketing Product	-187	5
Distribution	-45494	5

Table 5.1.2

Construction	Trend Gradient	Grade
Distribution	527233	1
Promotion	78961	4
Market Research	15079	5
Market Report	3634	5
Market Intelligence	1076	5
Marketing Product	740	5

Table 5.1.3

Electricity	Trend Gradient	Grade
Promotion	33847	4
Distribution	20118	5
Market Research	15522	5
Market Report	4466	5
Market Intelligence	-1169	5
Marketing Product	-1196	5

Table 5.1.4

Gas	Trend Gradient	Grade
Distribution	136442	3
Promotion	78193	4
Market Research	12112	5
Market Report	2597	5
Market Intelligence	-31	5
Marketing Product	-617	5

Table 5.1.5

Water Supply	Trend Gradient	Grade
Market Research	4175	5
Promotion	4047	5
Distribution	1947	5
Market Report	1654	5
Market Intelligence	-1875	5
Marketing Product	-1878	5

Table 5.1.6

Manufacturing	Trend Gradient	Grade
Distribution	204694	2
Promotion	78665	4
Market Research	12541	5
Market Report	2607	5
Market Intelligence	525	5
Marketing Product	101	5

Table 5.1.7

Accommodation	Trend Gradient	Grade
Promotion	63286	4
Distribution	62404	4
Market Research	14845	5
Market Report	4731	5
Market Intelligence	969	5
Marketing Product	563	5

Table 5.1.8

Cafes	Trend Gradient	Grade
Market Research	10380	5
Distribution	8934	5
Market Report	3114	5
Market Intelligence	690	5
Marketing Product	476	5
Promotion	-45429	5

Table 5.1.9

Restaurant	Trend Gradient	Grade
Distribution	179842	3
Promotion	133422	3
Market Research	14240	5
Market Report	3131	5
Market Intelligence	897	5
Marketing Product	510	5

Table 5.1.10

Communication Service	Trend Gradient	Grade
Market Research	6836	5
Market Report	791	5
Market Intelligence	711	5
Marketing Product	603	5
Promotion	-501	5
Distribution	-523	5

Table 5.1.11

Cultural Service	Trend Gradient	Grade
Marketing Product	638	5
Market Intelligence	34	5
Market Report	-122	5
Market Research	-293	5
Promotion	-1520	5
Distribution	-2011	5

Table 5.1.12

Recreation Service	Trend Gradient	Grade
Marketing Product	674	5
Market Intelligence	147	5
Market Report	-45	5
Market Research	-479	5
Promotion	-1496	5
Distribution	-2120	5

Table 5.1.13

Finance	Trend Gradient	Grade
Distribution	184044	3
Promotion	145908	3
Market Research	141660	3
Market Report	3370	5
Market Intelligence	837	5
Marketing Product	-159	5

Table 5.1.14

Insurance	Trend Gradient	Grade
Distribution	576932	1
Promotion	87288	4
Market Research	16288	5
Market Report	3323	5
Market Intelligence	1023	5
Marketing Product	451	5

Table 5.1.15

Personal Service	Trend Gradient	Grade
Market Research	3889	5
Distribution	3180	5
Market Report	2565	5
Promotion	2531	5
Marketing Product	1485	5
Market Intelligence	-2049	5

Table 5.1.16

Other Service	Trend Gradient	Grade
Marketing Product	1928	5
Distribution	-234	5
Market Intelligence	-317	5
Market Research	-1422	5
Promotion	-2301	5
Market Report	-10350	5

Table 5.1.17

Property Service	Trend Gradient	Grade
Marketing Product	3642	5
Market Intelligence	2873	5
Market Research	2497	5
Market Report	2362	5
Promotion	1084	5
Distribution	902	5

Table 5.1.18

Business Service	Trend Gradient	Grade
Market Research	4707	5
Distribution	3625	5
Promotion	3340	5
Market Report	3187	5
Marketing Product	978	5
Market Intelligence	398	5

Table 5.1.19

Retail Trade	Trend Gradient	Grade
Market Report	2023	5
Market Research	1784	5
Distribution	1057	5
Promotion	687	5
Marketing Product	-1530	5
Market Intelligence	-1924	5

Table 5.1.20

Transport	Trend Gradient	Grade
Distribution	92846	4
Promotion	78248	4
Market Research	12264	5
Market Report	1480	5
Market Intelligence	-551	5
Marketing Product	-903	5

Table 5.1.21

Storage	Trend Gradient	Grade
Promotion	77943	4
Distribution	40907	4
Market Research	11295	5
Market Report	1246	5
Market Intelligence	-1122	5
Marketing Product	-1396	5

Table 5.1.22

Wholesale Trade	Trend Gradient	Grade
Market Report	339	5
Market Intelligence	107	5
Marketing Product	-30	5
Market Research	-156	5
Distribution	-1043	5
Promotion	-1199	5

Table 5.1.23

Education	Trend Gradient	Grade
Distribution	393255	1
Promotion	79418	4
Market Research	13463	5
Market Report	3560	5
Market Intelligence	1272	5
Marketing Product	665	5

Table 5.1.24

Government Administration	Trend Gradient	Grade
Marketing Product	791	5
Market Intelligence	107	5
Market Report	47	5
Market Research	-91	5
Promotion	-1396	5
Distribution	-1499	5

Table 5.1.25

Defence	Trend Gradient	Grade
Promotion	15794	5
Market Research	14922	5
Distribution	13205	5
Market Report	3127	5
Market Intelligence	-1132	5
Marketing Product	-1268	5

Table 5.1.26

Health Service	Trend Gradient	Grade
Market Report	3853	5
Market Research	3534	5
Marketing Product	1973	5
Market Intelligence	-188	5
Promotion	-23409	5
Distribution	-127560	6

Table 5.1.27

Community Service	Trend Gradient	Grade
Market Research	15644	5
Promotion	12039	5
Distribution	11077	5
Market Report	4543	5
Market Intelligence	-516	5
Marketing Product	-970	5

Table 5.1.28

For Marketing, the greatest activity in most types of organisation, except Mining, Communication Service, Cultural Service, Recreation Service, Other Service, Property Service, Wholesale Trade, and Government Administration, were:

Distribution

Promotion

Market Research

Sorting by organisation activities in Marketing:

Marketing Product	Trend Gradient	Grade
Property Service	3642	5
Health Service	1973	5
Other Service	1928	5
Personal Service	1485	5
Business Service	978	5
Government Administration	791	5
Construction	740	5
Recreation Service	674	5
Education	665	5
Cultural Service	638	5
Communication Service	603	5
Accommodation	563	5
Restaurant	510	5
Cafes	476	5
Insurance	451	5
Agriculture	397	5
Manufacturing	101	5
Wholesale Trade	-30	5
Finance	-159	5
Mining	-187	5
Gas	-617	5
Transport	-903	5
Community Service	-970	5
Electricity	-1196	5
Defence	-1268	5
Storage	-1396	5
Retail Trade	-1530	5
Water Supply	-1878	5

Table 5.1.29

Distribution	Trend Gradient	Grade
Insurance	576932	1
Construction	527233	1
Education	393255	1
Manufacturing	204694	2
Finance	184044	3
Restaurant	179842	3
Gas	136442	3
Agriculture	117071	3
Transport	92846	4
Accommodation	62404	4
Storage	40907	4
Electricity	20118	5
Defence	13205	5
Community Service	11077	5
Cafes	8934	5
Business Service	3625	5
Personal Service	3180	5
Water Supply	1947	5
Retail Trade	1057	5
Property Service	902	5
Other Service	-234	5
Communication Service	-523	5
Wholesale Trade	-1043	5
Government Administration	-1499	5
Cultural Service	-2011	5
Recreation Service	-2120	5
Mining	-45494	5
Health Service	-127560	6

Table 5.1.30

Promotion	Trend Gradient	Grade
Finance	145908	3
Restaurant	133422	3
Insurance	87288	4
Education	79418	4
Construction	78961	4
Agriculture	78929	4
Manufacturing	78665	4
Transport	78248	4
Gas	78193	4
Storage	77943	4
Accommodation	63286	4
Mining	53717	4
Electricity	33847	4
Defence	15794	5
Community Service	12039	5
Water Supply	4047	5
Business Service	3340	5
Personal Service	2531	5
Property Service	1084	5
Retail Trade	687	5
Communication Service	-501	5
Wholesale Trade	-1199	5
Government Administration	-1396	5
Recreation Service	-1496	5
Cultural Service	-1520	5
Other Service	-2301	5
Health Service	-23409	5
Cafes	-45429	5

Table 5.1.31

Market Report	Trend Gradient	Grade
Accommodation	4731	5
Community Service	4543	5
Electricity	4466	5
Mining	4012	5
Health Service	3853	5
Construction	3634	5
Education	3560	5
Agriculture	3458	5
Finance	3370	5
Insurance	3323	5
Business Service	3187	5
Restaurant	3131	5
Defence	3127	5
Cafes	3114	5
Manufacturing	2607	5
Gas	2597	5
Personal Service	2565	5
Property Service	2362	5
Retail Trade	2023	5
Water Supply	1654	5
Transport	1480	5
Storage	1246	5
Communication Service	791	5
Wholesale Trade	339	5
Government Administration	47	5
Recreation Service	-45	5
Cultural Service	-122	5
Other Service	-10350	5

Table 5.1.32

Market Research	Trend Gradient	Grade
Finance	141660	3
Insurance	16288	5
Community Service	15644	5
Electricity	15522	5
Construction	15079	5
Defence	14922	5
Agriculture	14868	5
Accommodation	14845	5
Restaurant	14240	5
Education	13463	5
Mining	12861	5
Manufacturing	12541	5
Transport	12264	5
Gas	12112	5
Storage	11295	5
Cafes	10380	5
Communication Service	6836	5
Business Service	4707	5
Water Supply	4175	5
Personal Service	3889	5
Health Service	3534	5
Property Service	2497	5
Retail Trade	1784	5
Government Administration	-91	5
Wholesale Trade	-156	5
Cultural Service	-293	5
Recreation Service	-479	5
Other Service	-1422	5

Table 5.1.33

Market Intelligence	Trend Gradient	Grade
Property Service	2873	5
Education	1272	5
Construction	1076	5
Insurance	1023	5
Accommodation	969	5
Restaurant	897	5
Finance	837	5
Agriculture	762	5
Communication Service	711	5
Cafes	690	5
Manufacturing	525	5
Business Service	398	5
Mining	153	5
Recreation Service	147	5
Wholesale Trade	107	5
Government Administration	107	5
Cultural Service	34	5
Gas	-31	5
Health Service	-188	5
Other Service	-317	5
Community Service	-516	5
Transport	-551	5
Storage	-1122	5
Defence	-1132	5
Electricity	-1169	5
Water Supply	-1875	5
Retail Trade	-1924	5
Personal Service	-2049	5

Table 5.1.34

The summary of grades based on business activities in Marketing is listed below.

Distributions were rated in grade 1,2, 3, 4 and below,

Promotions were rated in grade 3, 4 and below,

One Market Research was rated in grade 3 and below.

The rest of the activities got in grade 5 and below, but Health Service in Distribution got grade 6.

The results seem to suggest that organisations have begun to realise that to attract attention to their customers, companies have to start buying advertising, placing

banners, and doing some Market Researches using the Internet. Organisations are finally realising the importance of the Internet as a total information delivery system now.

It is an opportunity to interact with customers, to talk about the company's online presence or even its nonelectronic products on the Internet. Online marketing represents the new generation of advertising, and smart marketers are already using the Internet as a powerful new way to create consumer awareness, to stimulate trial, even to sell their products and services.

This practice leads to the question of whether such advertising is effective. Marketers have been trying to find the answers by applying traditional principles of market research to the new medium. That might be one of the reasons why Distribution, Promotion, and Market Research are increasing faster than other actions in Marketing.

5.2 Manufacturing

With information technology development, an ever-larger number of industrial software alternatives offer the manufacturer a huge amount to study and choose. The newest technology to find use in manufacturing is the Internet. The Internet will allow integration of the enterprise. It is the Internet that makes it possible for manufacturing companies to coordinate operations ranging from product, cost, inventory, job report, etc. in a worldwide and real-time way as shown in the survey.

Sorting by organisation types in manufacturing:

Agriculture	Trend Gradient	Grade
Product	119542	3
Cost	119244	3
Quality	110942	3
Inventory	93884	3
Industrial Engineering	5670	5
Job Report	-1019	5
Manufacturing Intelligence	-1019	5

Table 5.2.1

Mining	Trend Gradient	Grade
Cost	80348	4
Inventory	50204	4
Quality	48463	4
Product	48356	4
Industrial Engineering	11420	5
Manufacturing Intelligence	-1498	5
Job Report	-1677	5

Table 5.2.2

Construction	Trend Gradient	Grade
Cost	920906	1
Product	900600	1
Quality	900438	1
Inventory	93257	4
Industrial Engineering	13885	5
Manufacturing Intelligence	-1336	5
Job Report	-9201	5

Table 5.2.3

Electricity	Trend Gradient	Grade
Cost	26809	4
Inventory	24961	4
Product	23825	4
Quality	23218	4
Industrial Engineering	11783	5
Job Report	-3179	5
Manufacturing Intelligence	-3195	5

Table 5.2.4

Gas	Trend Gradient	Grade
Product	132878	3
Quality	131609	3
Cost	130187	3
Inventory	96362	3
Industrial Engineering	10967	5
Manufacturing Intelligence	-2347	5
Job Report	-2399	5

Table 5.2.5

Water Supply	Trend Gradient	Grade
Inventory	31227	4
Industrial Engineering	7786	5
Cost	4980	5
Product	4138	5
Quality	3804	5
Job Report	-3528	5
Manufacturing Intelligence	-3605	5

Table 5.2.6

Manufacturing	Trend Gradient	Grade
Product	224687	2
Quality	200184	2
Cost	188784	3
Inventory	93028	4
Industrial Engineering	11611	5
Job Report	1737	5
Manufacturing Intelligence	-1553	5

Table 5.2.7

Accommodation	Trend Gradient	Grade
Inventory	63401	4
Quality	61587	4
Product	61461	4
Cost	61413	4
Industrial Engineering	11592	5
Manufacturing Intelligence	812	5
Job Report	-787	5

Table 5.2.8

Cafes	Trend Gradient	Grade
Product	10356	5
Industrial Engineering	10064	5
Quality	9839	5
Cost	9353	5
Inventory	9206	5
Job Report	-825	5
Manufacturing Intelligence	-842	5

Table 5.2.9

Restaurant	Trend Gradient	Grade
Product	181974	3
Quality	180894	3
Cost	180090	3
Inventory	93106	4
Industrial Engineering	11567	5
Manufacturing Intelligence	-708	5
Job Report	-753	5

Table 5.2.10

Communication Service	Trend Gradient	Grade
Product	2030	5
Quality	449	5
Industrial Engineering	363	5
Inventory	338	5
Manufacturing Intelligence	146	5
Job Report	-326	5
Cost	-733	5

Table 5.2.11

Cultural Service	Trend Gradient	Grade
Product	923	5
Job Report	28	5
Manufacturing Intelligence	8	5
Industrial Engineering	-547	5
Inventory	-946	5
Quality	-1528	5
Cost	-5781	5

Table 5.2.12

Recreation Service	Trend Gradient	Grade
Product	990	5
Manufacturing Intelligence	-17	5
Job Report	-32	5
Industrial Engineering	-505	5
Inventory	-931	5
Quality	-1319	5
Cost	-4992	5

Table 5.2.13

Finance	Trend Gradient	Grade
Product	185627	3
Quality	184438	3
Cost	184074	3
Inventory	16250	5
Industrial Engineering	12303	5
Manufacturing Intelligence	-1021	5
Job Report	-1045	5

Table 5.2.14

Insurance	Trend Gradient	Grade
Product	250137	2
Cost	209456	2
Quality	209409	2
Inventory	93093	4
Industrial Engineering	12495	5
Job Report	-717	5
Manufacturing Intelligence	-740	5

Table 5.2.15

Personal Service	Trend Gradient	Grade
Industrial Engineering	5628	5
Product	5135	5
Quality	4265	5
Cost	3586	5
Inventory	3485	5
Job Report	-1369	5
Manufacturing Intelligence	-1518	5

Table 5.2.16

Other Service	Trend Gradient	Grade
Quality	714	5
Product	485	5
Industrial Engineering	74	5
Job Report	-557	5
Manufacturing Intelligence	-830	5
Cost	-912	5
Inventory	-1298	5

Table 5.2.17

Property Service	Trend Gradient	Grade
Industrial Engineering	2223	5
Quality	1072	5
Product	724	5
Manufacturing Intelligence	255	5
Job Report	234	5
Inventory	-244	5
Cost	-2472	5

Table 5.2.18

Business Service	Trend Gradient	Grade
Product	5523	5
Quality	4321	5
Industrial Engineering	4314	5
Inventory	3990	5
Cost	3684	5
Manufacturing Intelligence	-734	5
Job Report	-1210	5

Table 5.2.19

Retail Trade	Trend Gradient	Grade
Product	3162	5
Industrial Engineering	1617	5
Quality	1395	5
Inventory	1203	5
Cost	1008	5
Manufacturing Intelligence	-2327	5
Job Report	-2369	5

Table 5.2.20

Transport	Trend Gradient	Grade
Product	96489	4
Quality	95776	4
Cost	95663	4
Inventory	92328	4
Industrial Engineering	10585	5
Job Report	-2755	5
Manufacturing Intelligence	-2758	5

Table 5.2.21

Storage	Trend Gradient	Grade
Product	113971	3
Quality	113607	3
Cost	112097	3
Inventory	92427	4
Industrial Engineering	10233	5
Job Report	-3172	5
Manufacturing Intelligence	-31705	5

Table 5.2.22

Wholesale Trade	Trend Gradient	Grade
Product	1577	5
Industrial Engineering	-54	5
Inventory	-183	5
Quality	-494	5
Job Report	-1128	5
Manufacturing Intelligence	-1156	5
Cost	-1969	5

Table 5.2.23

Education	Trend Gradient	Grade
Product	1000000	1
Cost	226470	2
Inventory	93600	4
Quality	65767	4
Industrial Engineering	11736	5
Job Report	-730	5
Manufacturing Intelligence	-838	5

Table 5.2.24

Government Administration	Trend Gradient	Grade
Product	1138	5
Job Report	91	5
Manufacturing Intelligence	69	5
Industrial Engineering	-354	5
Inventory	-550	5
Quality	-1044	5
Cost	-3659	5

Table 5.2.25

Defence	Trend Gradient	Grade
Cost	30232	4
Product	13719	5
Inventory	13672	5
Quality	13194	5
Industrial Engineering	11642	5
Job Report	-2638	5
Manufacturing Intelligence	-2667	5

Table 5.2.26

Health Service	Trend Gradient	Grade
Industrial Engineering	7570	5
Job Report	-1093	5
Manufacturing Intelligence	-3757	5
Inventory	-22118	5
Cost	-180150	7
Quality	-241571	7
Product	-262176	7

Table 5.2.27

Community Service	Trend Gradient	Grade
Quality	14613	5
Cost	14590	5
Product	14433	5
Industrial Engineering	13920	5
Inventory	12180	5
Job Report	-2664	5
Manufacturing Intelligence	-2798	5

Table 5.2.28

Surveying in the Manufacturing, except a bit difference in Cultural Service, Recreation Service, Other Service, Government Administration, and Health Service, the greatest activities were:

Quality

Cost

Product

Inventory

Industrial Engineering

Sorting by organization activities in Manufacturing:

Product	Trend Gradient	Grade
Education	1000000	1
Construction	900600	1
Insurance	250137	2
Manufacturing	224687	2
Finance	185627	3
Restaurant	181974	3
Gas	132878	3
Agriculture	119542	3
Storage	113971	3
Transport	96489	4
Accommodation	61461	4
Mining	48356	4
Electricity	23825	4
Community Service	14433	5
Defence	13719	5
Cafes	10356	5
Business Service	5523	5
Personal Service	5135	5
Water Supply	4138	5
Retail Trade	3162	5
Communication Service	2030	5
Wholesale Trade	1577	5
Government Administration	1138	5
Recreation Service	990	5
Cultural Service	923	5
Property Service	724	5
Other Service	485	5
Health Service	-262176	7

Table 5.2.29

Inventory	Trend Gradient	Grade
Gas	96362	3
Agriculture	93884	3
Education	93600	4
Construction	93257	4
Restaurant	93106	4
Insurance	93093	4
Manufacturing	93028	4
Storage	92427	4
Transport	92328	4
Accommodation	63401	4
Mining	50204	4
Water Supply	31227	4
Electricity	24961	4
Finance	16250	5
Defence	13672	5
Community Service	12180	5
Cafes	9206	5
Business Service	3990	5
Personal Service	3485	5
Retail Trade	1203	5
Communication Service	338	5
Wholesale Trade	-183	5
Property Service	-244	5
Government Administration	-550	5
Recreation Service	-931	5
Cultural Service	-946	5
Other Service	-1298	5
Health Service	-22118	5

Table 5.2.30

Quality	Trend Gradient	Grade
Construction	900438	1
Insurance	209409	2
Manufacturing	200184	2
Finance	184438	3
Restaurant	180894	3
Gas	131609	3
Storage	113607	3
Agriculture	110942	3
Transport	95776	4
Education	65767	4
Accommodation	61587	4
Mining	48463	4
Electricity	23218	4
Community Service	14613	5
Defence	13194	5
Cafes	9839	5
Business Service	4321	5
Personal Service	4265	5
Water Supply	3804	5
Retail Trade	1395	5
Property Service	1072	5
Other Service	714	5
Communication Service	449	5
Wholesale Trade	-494	5
Government Administration	-1044	5
Recreation Service	-1319	5
Cultural Service	-1528	5
Health Service	-241571	7

Table 5.2.31

Cost	Trend Gradient	Grade
Construction	920906	1
Education	226470	2
Insurance	209456	2
Manufacturing	188784	3
Finance	184074	3
Restaurant	180090	3
Gas	130187	3
Agriculture	119244	3
Storage	112097	3
Transport	95663	4
Mining	80348	4
Accommodation	61413	4
Defence	30232	4
Electricity	26809	4
Community Service	14590	5
Cafes	9353	5
Water Supply	4980	5
Business Service	3684	5
Personal Service	3586	5
Retail Trade	1008	5
Communication Service	-733	5
Other Service	-912	5
Wholesale Trade	-1969	5
Property Service	-2472	5
Government Administration	-3659	5
Recreation Service	-4992	5
Cultural Service	-5781	5
Health Service	-180150	7

Table 5.2.32

Job Report	Trend Gradient	Grade
Manufacturing	1737	5
Property Service	234	5
Government Administration	91	5
Cultural Service	28	5
Recreation Service	-32	5
Communication Service	-326	5
Other Service	-557	5
Insurance	-717	5
Education	-730	5
Restaurant	-753	5
Accommodation	-787	5
Cafes	-825	5
Agriculture	-1019	5
Finance	-1045	5
Health Service	-1093	5
Wholesale Trade	-1128	5
Business Service	-1210	5
Personal Service	-1369	5
Mining	-1677	5
Retail Trade	-2369	5
Gas	-2399	5
Defence	-2638	5
Community Service	-2664	5
Transport	-2755	5
Storage	-3172	5
Electricity	-3179	5
Water Supply	-3528	5
Construction	-9201	5

Table 5.2.33

Industrial Engineering	Trend Gradient	Grade
Community Service	13920	5
Construction	13885	5
Insurance	12495	5
Finance	12303	5
Electricity	11783	5
Education	11736	5
Defence	11642	5
Manufacturing	11611	5
Accommodation	11592	5
Restaurant	11567	5
Mining	11420	5
Gas	10967	5
Transport	10585	5
Storage	10233	5
Cafes	10064	5
Water Supply	7786	5
Health Service	7570	5
Agriculture	5670	5
Personal Service	5628	5
Business Service	4314	5
Property Service	2223	5
Retail Trade	1617	5
Communication Service	363	5
Other Service	74	5
Wholesale Trade	-54	5
Government Administration	-354	5
Recreation Service	-505	5
Cultural Service	-547	5

Table 5.2.34

Manufacturing Intelligence	Trend Gradient	Grade
Accommodation	812	5
Property Service	255	5
Communication Service	146	5
Government Administration	69	5
Cultural Service	8	5
Recreation Service	-17	5
Restaurant	-708	5
Business Service	-734	5
Insurance	-740	5
Other Service	-830	5
Education	-838	5
Cafes	-842	5
Agriculture	-1019	5
Finance	-1021	5
Wholesale Trade	-1156	5
Construction	-1336	5
Mining	-1498	5
Personal Service	-1518	5
Manufacturing	-1553	5
Retail Trade	-2327	5
Gas	-2347	5
Defence	-2667	5
Transport	-2758	5
Community Service	-2798	5
Electricity	-3195	5
Water Supply	-3605	5
Health Service	-3757	5
Storage	-31705	5

Table 5.2.35

A summary of grades based on business activities in Manufacturing is:

Product, Quality, and Cost were in grade 1, 2, 3, 4 and below,

Inventories were in grade 3, 4 and below.

The rest of activities were in grade 5, except Health Service, which in Product, Quality, and Cost has only got Grade 7.

The survey means that manufacturers, manufacturing vendors, and integrators are planning to use the Internet to link customers and suppliers. Manufacturers are taking ultimate advantage of electronic communication by facilitating the matching of vendors and businesses, speeding the traditionally slow, paper-based procedure by

electronically automating processes, maximising communications, and providing cost-effective solutions for growth.

Product, Quality, and Cost are ranged at high level in Manufacturing in the survey. These are the items that most close to customers and suppliers.

5.3 Financial

Financial information can help manager to achieve the objective of maximizing the value of the organization. Information technology is even more fundamental to financial services in particular.

More than in any other area of activities, the growth of international communications, the development of the data-processing capability of the big computer and the personal desk-top facility and the arrival of the day of commerce on the Internet have revolutionized the way in which finance is transacted.

However, the results in Financial surveyed directly from the Internet are not so high as the sections, such as Marketing, Manufacturing, Human Resource.

Sorting by organization types in financial:.

Agriculture	Trend Gradient	Grade
Internal Audit	1066	5
Funds Management	-48	5
Financial Control	-192	5
Financial Forecasting	-244	5
Accounting Report	-376	5
Financial Intelligence	-1026	5

Table 5.3.1

Mining	Trend Gradient	Grade
Internal Audit	1067	5
Financial Forecasting	-805	5
Funds Management	-830	5
Financial Control	-933	5
Accounting Report	-1079	5
Financial Intelligence	-1506	5

Table 5.3.2

Construction	Trend Gradient	Grade
Internal Audit	1285	5
Funds Management	124	5
Financial Control	67	5
Financial Forecasting	-60	5
Accounting Report	-137	5
Financial Intelligence	-1308	5

Table 5.3.3

Electricity	Trend Gradient	Grade
Internal Audit	1772	5
Funds Management	-2086	5
Financial Control	-2117	5
Financial Forecasting	-2263	5
Accounting Report	-2315	5
Financial Intelligence	-3188	5

Table 5.3.4

Gas	Trend Gradient	Grade
Internal Audit	368	5
Funds Management	-1380	5
Financial Control	-1443	5
Financial Forecasting	-1570	5
Financial Intelligence	-2346	5
Accounting Report	-36765	5

Table 5.3.5

Water Supply	Trend Gradient	Grade
Internal Audit	1512	5
Funds Management	-2514	5
Accounting Report	-2590	5
Financial Control	-2624	5
Financial Forecasting	-2777	5
Financial Intelligence	-3575	5

Table 5.3.6

Manufacturing	Trend Gradient	Grade
Internal Audit	701	5
Funds Management	-332	5
Financial Control	-482	5
Financial Forecasting	-669	5
Accounting Report	-777	5
Financial Intelligence	-1738	5

Table 5.3.7

Accommodation	Trend Gradient	Grade
Internal Audit	1405	5
Financial Forecasting	102	5
Funds Management	79	5
Financial Control	-30	5
Accounting Report	-166	5
Financial Intelligence	-796	5

Table 5.3.8

Cafes	Trend Gradient	Grade
Internal Audit	1677	5
Funds Management	-65	5
Financial Forecasting	-124	5
Financial Control	-131	5
Accounting Report	-271	5
Financial Intelligence	-836	5

Table 5.3.9

Restaurant	Trend Gradient	Grade
Internal Audit	1048	5
Funds Management	-9	5
Financial Control	-55	5
Financial Forecasting	-176	5
Accounting Report	-257	5
Financial Intelligence	-742	5

Table 5.3.10

Communication Service	Trend Gradient	Grade
Funds Management	658	5
Internal Audit	648	5
Financial Forecasting	468	5
Accounting Report	353	5
Financial Intelligence	223	5
Financial Control	1	5

Table 5.3.11

Cultural Service	Trend Gradient	Grade
Funds Management	415	5
Financial Control	391	5
Financial Forecasting	331	5
Financial Intelligence	22	5
Accounting Report	-40	5
Internal Audit	-498	5

Table 5.3.12

Recreation Service	Trend Gradient	Grade
Funds Management	463	5
Financial Control	428	5
Financial Forecasting	354	5
Financial Intelligence	-2	5
Accounting Report	-46	5
Internal Audit	-439	5

Table 5.3.13

Finance	Trend Gradient	Grade
Internal Audit	1056	5
Funds Management	-39	5
Financial Forecasting	-104	5
Financial Control	-145	5
Accounting Report	-327	5
Financial Intelligence	-1040	5

Table 5.3.14

Insurance	Trend Gradient	Grade
Internal Audit	1236	5
Financial Control	-54	5
Financial Forecasting	-109	5
Funds Management	-184	5
Accounting Report	-404	5
Financial Intelligence	-714	5

Table 5.3.15

Personal Service	Trend Gradient	Grade
Internal Audit	1506	5
Funds Management	-149	5
Financial Forecasting	-209	5
Financial Control	-357	5
Accounting Report	-858	5
Financial Intelligence	-1504	5

Table 5.3.16

Other Service	Trend Gradient	Grade
Internal Audit	2041	5
Financial Intelligence	-309	5
Financial Forecasting	-406	5
Accounting Report	-709	5
Funds Management	-903	5
Financial Control	-1266	5

Table 5.3.17

Property Service	Trend Gradient	Grade
Funds Management	3221	5
Financial Control	3159	5
Financial Forecasting	3100	5
Accounting Report	2940	5
Internal Audit	2260	5
Financial Intelligence	-22	5

Table 5.3.18

Business Service	Trend Gradient	Grade
Internal Audit	883	5
Funds Management	-326	5
Accounting Report	-463	5
Financial Control	-492	5
Financial Forecasting	-564	5
Financial Intelligence	-1234	5

Table 5.3.19

Retail Trade	Trend Gradient	Grade
Internal Audit	3878	5
Funds Management	-1899	5
Financial Control	-1994	5
Financial Forecasting	-2030	5
Accounting Report	-2142	5
Financial Intelligence	-2313	5

Table 5.3.20

Transport	Trend Gradient	Grade
Internal Audit	-419	5
Accounting Report	-1648	5
Funds Management	-1686	5
Financial Control	-1770	5
Financial Forecasting	-1998	5
Financial Intelligence	-2754	5

Table 5.3.21

Storage	Trend Gradient	Grade
Internal Audit	-355	5
Financial Control	-1768	5
Financial Forecasting	-2026	5
Funds Management	-2124	5
Accounting Report	-2355	5
Financial Intelligence	-3170	5

Table 5.3.22

Wholesale Trade	Trend Gradient	Grade
Internal Audit	188	5
Funds Management	-683	5
Financial Forecasting	-690	5
Financial Control	-766	5
Accounting Report	-880	5
Financial Intelligence	-1136	5

Table 5.3.23

Education	Trend Gradient	Grade
Internal Audit	1184	5
Funds Management	366	5
Financial Control	276	5
Financial Forecasting	195	5
Accounting Report	-31	5
Financial Intelligence	-849	5

Table 5.3.24

Government Administration	Trend Gradient	Grade
Financial Forecasting	522	5
Funds Management	510	5
Financial Control	437	5
Accounting Report	224	5
Financial Intelligence	84	5
Internal Audit	-294	5

Table 5.3.25

Defence	Trend Gradient	Grade
Internal Audit	1655	5
Financial Control	-992	5
Funds Management	-1789	5
Financial Forecasting	-1918	5
Accounting Report	-1947	5
Financial Intelligence	-2654	5

Table 5.3.26

Health Service	Trend Gradient	Grade
Internal Audit	1452	5
Funds Management	-85	5
Financial Control	-166	5
Financial Forecasting	-308	5
Accounting Report	-417	5
Financial Intelligence	-3571	5

Table 5.3.27

Community Service	Trend Gradient	Grade
Internal Audit	-54	5
Funds Management	-1757	5
Financial Forecasting	-1867	5
Accounting Report	-1947	5
Financial Control	-1958	5
Financial Intelligence	-2903	5

Table 5.3.28

The outstanding performances in Financial in the table of Trend Gradient and Grade were:

Internal Audit

Financial Control

Funds Management

except in Cultural Service, Recreation Service, Other Service, Property Service, and Government Administration.

Sorting by organization activities in Financial:

Financial Forecasting	Trend Gradient	Grade
Property Service	3100	5
Government Administration	522	5
Communication Service	468	5
Recreation Service	354	5
Cultural Service	331	5
Education	195	5
Accommodation	102	5
Construction	-60	5
Finance	-104	5
Insurance	-109	5
Cafes	-124	5
Restaurant	-176	5
Personal Service	-209	5
Agriculture	-244	5
Health Service	-308	5
Other Service	-406	5
Business Service	-564	5
Manufacturing	-669	5
Wholesale Trade	-690	5
Mining	-805	5
Gas	-1570	5
Community Service	-1867	5
Defence	-1918	5
Transport	-1998	5
Storage	-2026	5
Retail Trade	-2030	5
Electricity	-2263	5
Water Supply	-2777	5

Table 5.3.29

Funds Management	Trend Gradient	Grade
Property Service	3221	5
Communication Service	658	5
Government Administration	510	5
Recreation Service	463	5
Cultural Service	415	5
Education	366	5
Construction	124	5
Accommodation	79	5
Restaurant	-9	5
Finance	-39	5
Agriculture	-48	5
Cafes	-65	5
Health Service	-85	5
Personal Service	-149	5
Insurance	-184	5
Business Service	-326	5
Manufacturing	-332	5
Wholesale Trade	-683	5
Mining	-830	5
Other Service	-903	5
Gas	-1380	5
Transport	-1686	5
Community Service	-1757	5
Defence	-1789	5
Retail Trade	-1899	5
Electricity	-2086	5
Storage	-2124	5
Water Supply	-2514	5

Table 5.3.30

Financial Control	Trend Gradient	Grade
Property Service	3159	5
Government Administration	437	5
Recreation Service	428	5
Cultural Service	391	5
Education	276	5
Construction	67	5
Communication Service	1	5
Accommodation	-30	5
Insurance	-54	5
Restaurant	-55	5
Cafes	-131	5
Finance	-145	5
Health Service	-166	5
Agriculture	-192	5
Personal Service	-357	5
Manufacturing	-482	5
Business Service	-492	5
Wholesale Trade	-766	5
Mining	-933	5
Defence	-992	5
Other Service	-1266	5
Gas	-1443	5
Storage	-1768	5
Transport	-1770	5
Community Service	-1958	5
Retail Trade	-1994	5
Electricity	-2117	5
Water Supply	-2624	5

Table 5.3.31

Accounting Report	Trend Gradient	Grade
Property Service	2940	5
Communication Service	353	5
Government Administration	224	5
Education	-31	5
Cultural Service	-40	5
Recreation Service	-46	5
Construction	-137	5
Accommodation	-166	5
Restaurant	-257	5
Cafes	-271	5
Finance	-327	5
Agriculture	-376	5
Insurance	-404	5
Health Service	-417	5
Business Service	-463	5
Other Service	-709	5
Manufacturing	-777	5
Personal Service	-858	5
Wholesale Trade	-880	5
Mining	-1079	5
Transport	-1648	5
Defence	-1947	5
Community Service	-1947	5
Retail Trade	-2142	5
Electricity	-2315	5
Storage	-2355	5
Water Supply	-2590	5
Gas	-36765	5

Table 5.3.32

Internal Audit	Trend Gradient	Grade
Retail Trade	3878	5
Property Service	2260	5
Other Service	2041	5
Electricity	1772	5
Cafes	1677	5
Defence	1655	5
Water Supply	1512	5
Personal Service	1506	5
Health Service	1452	5
Accommodation	1405	5
Construction	1285	5
Insurance	1236	5
Education	1184	5
Mining	1067	5
Agriculture	1066	5
Finance	1056	5
Restaurant	1048	5
Business Service	883	5
Manufacturing	701	5
Communication Service	648	5
Gas	368	5
Wholesale Trade	188	5
Community Service	-54	5
Government Administration	-294	5
Storage	-355	5
Transport	-419	5
Recreation Service	-439	5
Cultural Service	-498	5

Table 5.3.33

Financial Intelligence	Trend Gradient	Grade
Communication Service	223	5
Government Administration	84	5
Cultural Service	22	5
Recreation Service	-2	5
Property Service	-22	5
Other Service	-309	5
Insurance	-714	5
Restaurant	-742	5
Accommodation	-796	5
Cafes	-836	5
Education	-849	5
Agriculture	-1026	5
Finance	-1040	5
Wholesale Trade	-1136	5
Business Service	-1234	5
Construction	-1308	5
Personal Service	-1504	5
Mining	-1506	5
Manufacturing	-1738	5
Retail Trade	-2313	5
Gas	-2346	5
Defence	-2654	5
Transport	-2754	5
Community Service	-2903	5
Storage	-3170	5
Electricity	-3188	5
Health Service	-3571	5
Water Supply	-3575	5

Table 5.3.34

The grade in Financial all were 5.

Although electronic commerce cannot yet support secure financial transactions, the Internet can be used to obtain global information updates - often at no charge, as the alternative financing market grows.

However, the financial services both inside and outside the firm allow owners to monitor the behavior of managers. This strengthens the organization's governance structure, forcing managers to pay closer attention to owners' interests. Financial information provides the central core around which decisions affecting the future of

the organization are based. The Internet, acting as an on-going method of financial monitoring and control, is used prudently in Financial judging from the survey.

Normally, business requires close scrutiny by persons from other sections. Such internal audits may play a regular part in the firm's system of control, with each area being investigated in turn. Audits can vary in size and scope, from those instituted by operational managers in order study a particular aspect of operations, to those instituted by top management for entire departments or divisions. That could be used to explain the outstanding performance of Internal Audit in Financial on the Internet.

5.4 Human Resources

As automation creeps into every business process, even corporations are turning to electronic databases to track potential employees, government legislation, safety, labour relations, payroll and other human resource administrative tasks. Organisations that have automated routine human resources administration result in a reduction of human resource headcounter, as well as freeing up functional resources for attention to more strategic matters.

Sorting by organisation types in human resources:

Agriculture	Trend Gradient	Grade
Benefits	117585	3
Safety	117491	3
Recruiting	53110	4
Compensation	32069	4
Payroll	18836	5
HR Intelligence	1039	5
Labour Relations	1036	5
Government Legislation	402	5
Personal Records	-301	5
Human Resource Research	-399	5
Personnel Planning	-430	5
Administration	-118143	6

Table 5.4.1

Mining	Trend Gradient	Grade
Administration	66152	4
Recruiting	53716	4
Safety	50410	4
Compensation	50130	4
Benefits	50068	4
Payroll	18924	5
Government Legislation	-983	5
Personal Records	-1084	5
Human Resource Research	-1185	5
Personnel Planning	-1220	5
Labour Relations	-1677	5
HR Intelligence	-1698	5

Table 5.4.2

Construction	Trend Gradient	Grade
Administration	353654	1
Safety	206463	2
Benefits	144823	3
Recruiting	53620	4
Compensation	32157	4
Payroll	16694	5
Personal Records	-127	5
Personnel Planning	-154	5
Government Legislation	-188	5
Human Resource Research	-244	5
Labour Relations	-1332	5
HR Intelligence	-1334	5

Table 5.4.3

Electricity	Trend Gradient	Grade
Recruiting	52935	4
Administration	25514	4
Compensation	25103	4
Benefits	24527	4
Safety	21256	5
Payroll	19254	5
Personal Records	-2136	5
Government Legislation	-2367	5
Human Resource Research	-2429	5
Personnel Planning	-2431	5
Labour Relations	-3187	5
HR Intelligence	-3202	5

Table 5.4.4

Gas	Trend Gradient	Grade
Administration	141542	3
Safety	131362	3
Benefits	131169	3
Compensation	65541	4
Recruiting	58482	4
Payroll	17684	5
Personnel Planning	-1386	5
Personal Records	-1681	5
Government Legislation	-1704	5
Human Resource Research	-1811	5
Labour Relations	-2415	5
HR Intelligence	-2440	5

Table 5.4.5

Water Supply	Trend Gradient	Grade
Payroll	4090	5
Administration	3955	5
Recruiting	3812	5
Safety	3621	5
Compensation	3358	5
Benefits	2803	5
Personal Records	-2361	5
Government Legislation	-2969	5
Personnel Planning	-3046	5
Human Resource Research	-3054	5
Labour Relations	-3582	5
HR Intelligence	-3592	5

Table 5.4.6

Manufacturing	Trend Gradient	Grade
Administration	283694	1
Safety	188298	3
Benefits	188158	3
Recruiting	50050	4
Compensation	26030	4
Payroll	16222	5
Personnel Planning	-752	5
Personal Records	-760	5
Government Legislation	-821	5
Human Resource Research	-879	5
Labour Relations	-1745	5
HR Intelligence	-1748	5

Table 5.4.7

Accommodation	Trend Gradient	Grade
Administration	63782	4
Compensation	63179	4
Benefits	62985	4
Safety	59612	4
Recruiting	53260	4
Payroll	19180	5
Personal Records	-172	5
Government Legislation	-201	5
Human Resource Research	-271	5
Personnel Planning	-294	5
Labour Relations	-420	5
HR Intelligence	-815	5

Table 5.4.8

Cafes	Trend Gradient	Grade
Payroll	10114	5
Recruiting	9816	5
Safety	9609	5
Compensation	9415	5
Administration	9228	5
Benefits	7909	5
Human Resource Research	-373	5
Personnel Planning	-429	5
Personal Records	-696	5
HR Intelligence	-851	5
Labour Relations	-856	5
Government Legislation	-960	5

Table 5.4.9

Restaurant	Trend Gradient	Grade
Administration	185162	3
Safety	180657	3
Benefits	180610	3
Recruiting	50451	4
Compensation	26354	4
Payroll	18876	5
Personal Records	-258	5
Government Legislation	-333	5
Human Resource Research	-363	5
Personnel Planning	-393	5
Labour Relations	-752	5
HR Intelligence	-764	5

Table 5.4.10

Communication Service	Trend Gradient	Grade
Personnel Planning	1098	5
Administration	932	5
Government Legislation	898	5
Human Resource Research	615	5
Recruiting	391	5
Safety	314	5
Labour Relations	-24	5
HR Intelligence	-26	5
Benefits	-189	5
Personal Records	-243	5
Payroll	-466	5
Compensation	-1604	5

Table 5.4.11

Cultural Service	Trend Gradient	Grade
Government Legislation	222	5
Personnel Planning	38	5
HR Intelligence	9	5
Human Resource Research	-10	5
Personal Records	-137	5
Administration	-206	5
Recruiting	-627	5
Safety	-684	5
Labour Relations	-684	5
Benefits	-1214	5
Payroll	-1468	5
Compensation	-2880	5

Table 5.4.12

Recreation Service	Trend Gradient	Grade
Government Legislation	231	5
Personal Records	78	5
Personnel Planning	13	5
Human Resource Research	9	5
Labour Relations	-13	5
Administration	-14	5
HR Intelligence	-16	5
Safety	-608	5
Recruiting	-622	5
Benefits	-1165	5
Payroll	-1404	5
Compensation	-2891	5

Table 5.4.13

Finance	Trend Gradient	Grade
Benefits	184225	3
Safety	184197	3
Administration	173539	3
Recruiting	50454	4
Compensation	26345	4
Payroll	18897	5
Government Legislation	-273	5
Personal Records	-328	5
Personnel Planning	-351	5
Human Resource Research	-434	5
Labour Relations	-1078	5
HR Intelligence	-1080	5

Table 5.4.14

Insurance	Trend Gradient	Grade
Administration	355229	1
Safety	220423	2
Benefits	219648	2
Recruiting	50956	4
Compensation	27924	4
Payroll	17672	5
Personal Records	-174	5
Government Legislation	-212	5
Human Resource Research	-325	5
Personnel Planning	-500	5
Labour Relations	-737	5
HR Intelligence	-740	5

Table 5.4.15

Personal Service	Trend Gradient	Grade
Administration	4297	5
Recruiting	3672	5
Safety	3493	5
Payroll	2988	5
Benefits	2849	5
Compensation	1587	5
Personnel Planning	558	5
Human Resource Research	228	5
Government Legislation	26	5
Personal Records	-1234	5
Labour Relations	-1437	5
HR Intelligence	-1440	5

Table 5.4.16

Other Service	Trend Gradient	Grade
Labour Relations	259	5
Human Resource Research	-196	5
Safety	-330	5
HR Intelligence	-426	5
Personnel Planning	-495	5
Government Legislation	-644	5
Administration	-726	5
Personal Records	-1068	5
Recruiting	-1123	5
Benefits	-1473	5
Payroll	-1996	5
Compensation	-3336	5

Table 5.4.17

Property Service	Trend Gradient	Grade
Administration	2963	5
Government Legislation	2962	5
Human Resource Research	2940	5
Personal Records	2872	5
Personnel Planning	2617	5
Recruiting	2143	5
Safety	1719	5
Payroll	1271	5
Benefits	1094	5
Labour Relations	259	5
HR Intelligence	180	5
Compensation	-308	5

Table 5.4.18

Business Service	Trend Gradient	Grade
Administration	4508	5
Recruiting	4184	5
Safety	3855	5
Payroll	3815	5
Benefits	3452	5
Personal Records	-482	5
Government Legislation	-676	5
Human Resource Research	-694	5
Personnel Planning	-729	5
HR Intelligence	-1232	5
Labour Relations	-1236	5
Compensation	-2185	5

Table 5.4.19

Retail Trade	Trend Gradient	Grade
Payroll	2626	5
Administration	2435	5
Safety	1631	5
Recruiting	1530	5
Benefits	1396	5
Compensation	-658	5
Government Legislation	-2004	5
Human Resource Research	-2080	5
Personnel Planning	-2211	5
Personal Records	-2238	5
Labour Relations	-2298	5
HR Intelligence	-2301	5

Table 5.4.20

Transport	Trend Gradient	Grade
Administration	109266	3
Safety	96335	4
Benefits	94323	4
Recruiting	49444	4
Compensation	39182	4
Payroll	15265	5
Government Legislation	-1780	5
Personnel Planning	-1840	5
Personal Records	-1950	5
Human Resource Research	-2094	5
HR Intelligence	-2783	5
Labour Relations	-2790	5

Table 5.4.21

Storage	Trend Gradient	Grade
Safety	112731	3
Benefits	112664	3
Recruiting	51935	4
Compensation	50602	4
Payroll	17014	5
Personal Records	-2372	5
Personnel Planning	-2410	5
Government Legislation	-2446	5
Human Resource Research	-2539	5
Labour Relations	-3203	5
HR Intelligence	-3263	5
Administration	-112922	6

Table 5.4.22

Wholesale Trade	Trend Gradient	Grade
Administration	388	5
Recruiting	-30	5
Safety	-35	5
Benefits	-489	5
Payroll	-710	5
Personal Records	-826	5
Government Legislation	-1009	5
Personnel Planning	-1122	5
Human Resource Research	-1126	5
Labour Relations	-1148	5
HR Intelligence	-1150	5
Compensation	-1950	5

Table 5.4.23

Education	Trend Gradient	Grade
Administration	363043	1
Benefits	144986	3
Safety	99341	4
Recruiting	50929	4
Compensation	26998	4
Payroll	17163	5
Personal Records	-49	5
Government Legislation	-104	5
Human Resource Research	-136	5
Personnel Planning	-168	5
Labour Relations	-748	5
HR Intelligence	-821	5

Table 5.4.24

Government Administration	Trend Gradient	Grade
Government Legislation	380	5
Human Resource Research	353	5
Administration	322	5
Personnel Planning	316	5
Personal Records	190	5
Labour Relations	174	5
HR Intelligence	70	5
Recruiting	-438	5
Safety	-507	5
Benefits	-1092	5
Payroll	-1230	5
Compensation	-2669	5

Table 5.4.25

Defence	Trend Gradient	Grade
Recruiting	53106	4
Payroll	19337	5
Administration	14484	5
Compensation	13930	5
Benefits	13339	5
Safety	12920	5
Personal Records	-1856	5
Government Legislation	-2072	5
Human Resource Research	-2102	5
Personnel Planning	-2127	5
Labour Relations	-2362	5
HR Intelligence	-2667	5

Table 5.4.26

Health Service	Trend Gradient	Grade
Personal Records	-276	5
Government Legislation	-289	5
Payroll	-1210	5
Personnel Planning	-1997	5
Human Resource Research	-3064	5
Labour Relations	-3486	5
HR Intelligence	-3774	5
Recruiting	-4270	5
Compensation	-14132	5
Safety	-71799	5
Benefits	-131330	6
Administration	-230550	7

Table 5.4.27

Community Service	Trend Gradient	Grade
Payroll	13173	5
Administration	13107	5
Recruiting	12903	5
Safety	12407	5
Compensation	12127	5
Benefits	11860	5
Personal Records	-1761	5
Government Legislation	-2227	5
Human Resource Research	-2255	5
Personnel Planning	-2288	5
HR Intelligence	-2904	5
Labour Relations	-3932	5

Table 5.4.28

The well-performed actions in Human Resources in the table of trend gradient and grade were:

Administration

Compensation

Benefits

Safety

Payroll

Recruiting

except in Communication Service, Cultural Service, Recreation Service, Other Service, Property Service, Government Administration, and Health Service.

Sorting by organisation activities in Human Resources:

Personnel Planning	Trend Gradient	Grade
Property Service	2617	5
Communication Service	1098	5
Personal Service	558	5
Government Administration	316	5
Cultural Service	38	5
Recreation Service	13	5
Construction	-154	5
Education	-168	5
Accommodation	-294	5
Finance	-351	5
Restaurant	-393	5
Cafes	-429	5
Agriculture	-430	5
Other Service	-495	5
Insurance	-500	5
Business Service	-729	5
Manufacturing	-752	5
Wholesale Trade	-1122	5
Mining	-1220	5
Gas	-1386	5
Transport	-1840	5
Health Service	-1997	5
Defence	-2127	5
Retail Trade	-2211	5
Community Service	-2288	5
Storage	-2410	5
Electricity	-2431	5
Water Supply	-3046	5

Table 5.4.29

Administration	Trend Gradient	Grade
Education	363043	1
Insurance	355229	1
Construction	353654	1
Manufacturing	283694	1
Restaurant	185162	3
Finance	173539	3
Gas	141542	3
Transport	109266	3
Mining	66152	4
Accommodation	63782	4
Electricity	25514	4
Defence	14484	5
Community Service	13107	5
Cafes	9228	5
Business Service	4508	5
Personal Service	4297	5
Water Supply	3955	5
Property Service	2963	5
Retail Trade	2435	5
Communication Service	932	5
Wholesale Trade	388	5
Government Administration	322	5
Recreation Service	-14	5
Cultural Service	-206	5
Other Service	-726	5
Storage	-112922	6
Agriculture	-118143	6
Health Service	-230550	7

Table 5.4.30

Compensation	Trend Gradient	Grade
Gas	65541	4
Accommodation	63179	4
Storage	50602	4
Mining	50130	4
Transport	39182	4
Construction	32157	4
Agriculture	32069	4
Insurance	27924	4
Education	26998	4
Restaurant	26354	4
Finance	26345	4
Manufacturing	26030	4
Electricity	25103	4
Defence	13930	5
Community Service	12127	5
Cafes	9415	5
Water Supply	3358	5
Personal Service	1587	5
Property Service	-308	5
Retail Trade	-658	5
Communication Service	-1604	5
Wholesale Trade	-1950	5
Business Service	-2185	5
Government Administration	-2669	5
Cultural Service	-2880	5
Recreation Service	-2891	5
Other Service	-3336	5
Health Service	-14132	5

Table 5.4.31

Government Legislation	Trend Gradient	Grade
Property Service	2962	5
Communication Service	898	5
Agriculture	402	5
Government Administration	380	5
Recreation Service	231	5
Cultural Service	222	5
Personal Service	26	5
Education	-104	5
Construction	-188	5
Accommodation	-201	5
Insurance	-212	5
Finance	-273	5
Health Service	-289	5
Restaurant	-333	5
Other Service	-644	5
Business Service	-676	5
Manufacturing	-821	5
Cafes	-960	5
Mining	-983	5
Wholesale Trade	-1009	5
Gas	-1704	5
Transport	-1780	5
Retail Trade	-2004	5
Defence	-2072	5
Community Service	-2227	5
Electricity	-2367	5
Storage	-2446	5
Water Supply	-2969	5

Table 5.4.32

Recruiting	Trend Gradient	Grade
Gas	58482	4
Mining	53716	4
Construction	53620	4
Accommodation	53260	4
Agriculture	53110	4
Defence	53106	4
Electricity	52935	4
Storage	51935	4
Insurance	50956	4
Education	50929	4
Finance	50454	4
Restaurant	50451	4
Manufacturing	50050	4
Transport	49444	4
Community Service	12903	5
Cafes	9816	5
Business Service	4184	5
Water Supply	3812	5
Personal Service	3672	5
Property Service	2143	5
Retail Trade	1530	5
Communication Service	391	5
Wholesale Trade	-30	5
Government Administration	-438	5
Recreation Service	-622	5
Cultural Service	-627	5
Other Service	-1123	5
Health Service	-4270	5

Table 5.4.33

Benefits	Trend Gradient	Grade
Insurance	219648	2
Manufacturing	188158	3
Finance	184225	3
Restaurant	180610	3
Education	144986	3
Construction	144823	3
Gas	131169	3
Agriculture	117585	3
Storage	112664	3
Transport	94323	4
Accommodation	62985	4
Mining	50068	4
Electricity	24527	4
Defence	13339	5
Community Service	11860	5
Cafes	7909	5
Business Service	3452	5
Personal Service	2849	5
Water Supply	2803	5
Retail Trade	1396	5
Property Service	1094	5
Communication Service	-189	5
Wholesale Trade	-489	5
Government Administration	-1092	5
Recreation Service	-1165	5
Cultural Service	-1214	5
Other Service	-1473	5
Health Service	-131330	6

Table 5.4.34

Safety	Trend Gradient	Grade
Insurance	220423	2
Construction	206463	2
Manufacturing	188298	3
Finance	184197	3
Restaurant	180657	3
Gas	131362	3
Agriculture	117491	3
Storage	112731	3
Education	99341	4
Transport	96335	4
Accommodation	59612	4
Mining	50410	4
Electricity	21256	5
Defence	12920	5
Community Service	12407	5
Cafes	9609	5
Business Service	3855	5
Water Supply	3621	5
Personal Service	3493	5
Property Service	1719	5
Retail Trade	1631	5
Communication Service	314	5
Wholesale Trade	-35	5
Other Service	-330	5
Government Administration	-507	5
Recreation Service	-608	5
Cultural Service	-684	5
Health Service	-71799	5

Table 5.4.35

Labour Relations	Trend Gradient	Grade
Agriculture	1036	5
Other Service	259	5
Property Service	259	5
Government Administration	174	5
Recreation Service	-13	5
Communication Service	-24	5
Accommodation	-420	5
Cultural Service	-684	5
Insurance	-737	5
Education	-748	5
Restaurant	-752	5
Cafes	-856	5
Finance	-1078	5
Wholesale Trade	-1148	5
Business Service	-1236	5
Construction	-1332	5
Personal Service	-1437	5
Mining	-1677	5
Manufacturing	-1745	5
Retail Trade	-2298	5
Defence	-2362	5
Gas	-2415	5
Transport	-2790	5
Electricity	-3187	5
Storage	-3203	5
Health Service	-3486	5
Water Supply	-3582	5
Community Service	-3932	5

Table 5.4.36

Payroll	Trend Gradient	Grade
Defence	19337	5
Electricity	19254	5
Accommodation	19180	5
Mining	18924	5
Finance	18897	5
Restaurant	18876	5
Agriculture	18836	5
Gas	17684	5
Insurance	17672	5
Education	17163	5
Storage	17014	5
Construction	16694	5
Manufacturing	16222	5
Transport	15265	5
Community Service	13173	5
Cafes	10114	5
Water Supply	4090	5
Business Service	3815	5
Personal Service	2988	5
Retail Trade	2626	5
Property Service	1271	5
Communication Service	-466	5
Wholesale Trade	-710	5
Health Service	-1210	5
Government Administration	-1230	5
Recreation Service	-1404	5
Cultural Service	-1468	5
Other Service	-1996	5

Table 5.4.37

Personal Records	Trend Gradient	Grade
Property Service	2872	5
Government Administration	190	5
Recreation Service	78	5
Education	-49	5
Construction	-127	5
Cultural Service	-137	5
Accommodation	-172	5
Insurance	-174	5
Communication Service	-243	5
Restaurant	-258	5
Health Service	-276	5
Agriculture	-301	5
Finance	-328	5
Business Service	-482	5
Cafes	-696	5
Manufacturing	-760	5
Wholesale Trade	-826	5
Other Service	-1068	5
Mining	-1084	5
Personal Service	-1234	5
Gas	-1681	5
Community Service	-1761	5
Defence	-1856	5
Transport	-1950	5
Electricity	-2136	5
Retail Trade	-2238	5
Water Supply	-2361	5
Storage	-2372	5

Table 5.4.38

Human Resources Research	Trend Gradient	Grade
Property Service	2940	5
Communication Service	615	5
Government Administration	353	5
Personal Service	228	5
Recreation Service	9	5
Cultural Service	-10	5
Education	-136	5
Other Service	-196	5
Construction	-244	5
Accommodation	-271	5
Insurance	-325	5
Restaurant	-363	5
Cafes	-373	5
Agriculture	-399	5
Finance	-434	5
Business Service	-694	5
Manufacturing	-879	5
Wholesale Trade	-1126	5
Mining	-1185	5
Gas	-1811	5
Retail Trade	-2080	5
Transport	-2094	5
Defence	-2102	5
Community Service	-2255	5
Electricity	-2429	5
Storage	-2539	5
Water Supply	-3054	5
Health Service	-3064	5

Table 5.4.39

HR Intelligence	Trend Gradient	Grade
Agriculture	1039	5
Property Service	180	5
Government Administration	70	5
Cultural Service	9	5
Recreation Service	-16	5
Communication Service	-26	5
Other Service	-426	5
Insurance	-740	5
Restaurant	-764	5
Accommodation	-815	5
Education	-821	5
Cafes	-851	5
Finance	-1080	5
Wholesale Trade	-1150	5
Business Service	-1232	5
Construction	-1334	5
Personal Service	-1440	5
Mining	-1698	5
Manufacturing	-1748	5
Retail Trade	-2301	5
Gas	-2440	5
Defence	-2667	5
Transport	-2783	5
Community Service	-2904	5
Electricity	-3202	5
Storage	-3263	5
Water Supply	-3592	5
Health Service	-3774	5

Table 5.4.40

The summary of grades in Human Resource is shown below:

Administrations were in grade 1, 2, 3, 4, and below,

Benefits and Safety were in grade 2, 3, 4, and below,

Compensations were listed in grade 4 and below.

In the rest of activities was in grade 5 and below. Storage and Agriculture in Personnel Planning, Health Service in Benefits got grade 6. And Health Service in Administration got grade 7.

The survey showed that human resources had been automating as many transaction processes as possible and making them available to line managers and employees on line. By doing so, human resource appear to have been able to significantly reduce the time spent on routing administrative tasks and eliminate many of the positions formerly needed to perform these tasks.

Until recently, most human resource information systems (HRIS) have been developed in-house on mainframe computers in order to automate the most basic human resources functions such as payroll and benefits administration. Nowadays the Internet is a useful tool that will enhance human resources administration.

The bottom line of all this is that increased competition is forcing organisations, and their human resources functions, to be more responsive to customers and at the same time cut operating expenses in order to be more price competitive while still maintaining attractive margins. The thesis indicated that technology market in Human Resources was moving quickly to replace the paper and administrative contacts that caused bottlenecks and delays in Administration, Safety, Benefits, Recruiting, and other routines.

6. Conclusion

6.1 A general picture directly taken from the Internet

The expansion of business activity on the Internet, stems from the changes in business environments in the 1990s, and the development of information technology.

Two very powerful world-wide changes have altered the environment for business. The first change is the emergence and strengthening of the global economy. The second change is the transformation of industrial economies and societies into knowledge, and information based service economies (Laudon, et al 1993). The changes have broken the bars of industries, geographical areas, and speed up the process of doing business. The Internet, as a network of networks, has as its greatest strength the ability to enable global communications.

This study has shown a portion of development that organisations doing business on the Internet. It seems from the survey that organisations are searching for successful ways of improving products and services and the organisations themselves. Thus more organisations will take more business activities on the Internet to gather the most up-to-date information about the marketplace hence bestowing competitive advantage.

From the survey, current high development pathway categories (grade 1 - 4) are:

Grade 1

Marketing	
Distribution:	Construction, Insurance, Education
Manufacturing	
Product:	Construction, Education
Quality:	Construction
Cost:	Construction
Human Resource	
Administration:	Construction, Manufacturing, Insurance, Education

Figure 6.1

Grade 2

Marketing	
Distribution:	Manufacturing, Insurance
Manufacturing	
Product:	Manufacturing, Insurance
Quality:	Manufacturing, Insurance
Cost:	Insurance, Education
Human Resource	
Benefits:	Insurance
Safety:	Construction, Insurance

Figure 6.2

Grade 3

Marketing	
Distribution:	Agriculture, Gas, Finance, Restaurant
Promotion:	Restaurant, Finance
Market Research:	Finance
Manufacturing	
Product:	Agriculture, Gas, Restaurant, Finance, Storage
Inventory:	Agriculture, Gas,
Quality:	Agriculture, Gas, Restaurant, Finance, Storage
Cost:	Agriculture, Gas, Manufacturing, Restaurant, Finance, Storage
Human Resource	
Administration:	Gas, Restaurant, Finance, Transport
Recruiting:	Transport
Benefits:	Agriculture, Construction, Gas, Manufacturing, Restaurant, Finance, Storage, Education
Safety:	Agriculture, Gas, Manufacturing, Restaurant, Finance, Storage

Figure 6.3

Grade 4

Marketing	
Distribution:	Accommodation, Transport, Storage
Promotion:	Agriculture, Mining, Construction, Electricity, Gas, Manufacturing, Accommodation, Insurance, Transport, Storage, Education
Market Research:	Accommodation
Manufacturing	
Product:	Mining, Electricity, Accommodation, Transport
Inventory:	Mining, Construction, Manufacturing, Electricity, Insurance, Water Supply, Accommodation, Restaurant, Transport, Storage, Education
Quality:	Mining, Electricity, Accommodation, Transport, Education
Cost:	Mining, Electricity, Accommodation, Transport, Defence
Human Resource	
Administration:	Mining, Electricity, Accommodation
Compensation:	Agriculture, Mining, Construction, Electricity, Gas, Accommodation, Restaurant, Finance, Insurance, Transport, Storage, Education
Recruitment:	Agriculture, Mining, Construction, Electricity, Gas, Manufacturing, Accommodation, Restaurant, Finance, Insurance, Storage, Education, Transport, Defence
Benefits:	Mining, Electricity, Accommodation, Transport
Safety:	Mining, Accommodation, Transport, Education

Figure 6.4

Note: No Financial category is found in any Grade above 4.

By summarising the survey data in each of the Marketing, Manufacturing, Financial, and Human Resource categories, it is possible to display a general picture of Internet activities. Knowing this, an organisation is able to decide whether an Internet presence is likely to be successful. Any grade higher than the mean (grade 1, 2, 3, and 4) indicates a sound development pathway category. Of course, the higher the grade the better the development pathway. If on the other hand the gradient is less than the mean (grade 5, 6, and 7), special attention needs to be given to any investment within this pathway category.

A chart summary of the Marketing, Manufacturing, Financial, and Human Resources groups as a whole is shown below:

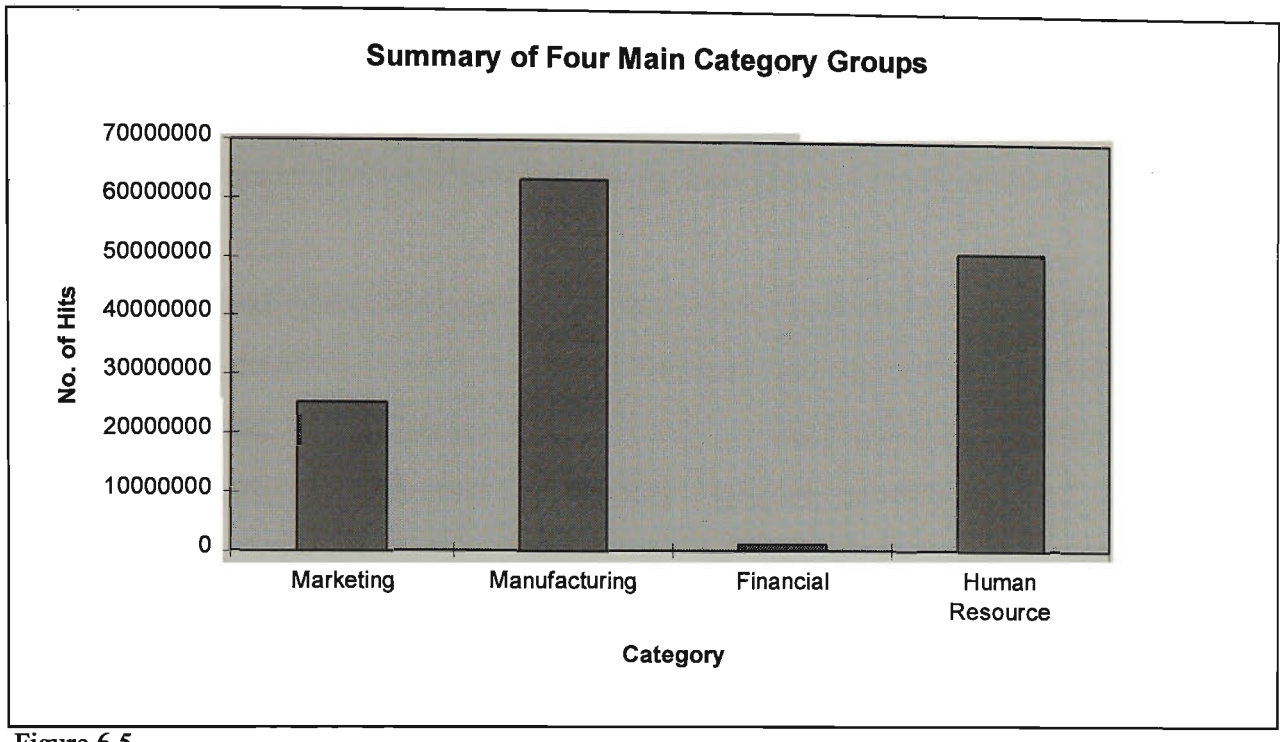

Figure 6.5

The Financial group has shown the lowest level of activity as shown in the Figure 6.5, and the Grades in Financial are all listed as Grade 5 (refer to chapter 5.3). Within the Financial group, the low activity indicates that organizations are pretty prudent with their actions on the Internet. The reason could be related to the nature of finance. At the national or global level, financial systems are extremely complex and extremely volatile. Finance is so vulnerable to economic variability that they are tightly supervised and regulated. Changes in the flows of financial activities can greatly affect the financial well-being of entire national economies. Since the Internet is a huge enormous open world, it is necessary to undertake financial activities on the Internet very cautiously.

Surprisingly the Manufacturing group has shown high activities in Figure 6.5. In Manufacturing, organisations have seen the valuable opportunities in the Internet because they see that their activities are linked with factors which are closest to customers and suppliers, that is Product, Inventory, Quality, and Cost (refer to chapter

5.2). Normally, manufacturing is a conversion process which is based on technical relationships between inputs and outputs. Knowledge of the technical relationships is a prerequisite for deriving operation costs. Organisations are therefore developing Internet technology try to put their organisation as activities into the public domain thereby competing on the basis of a better implementation of those business applications. These results are indicated by the high level of Manufacturing activity.

Similarly, it seems Marketing organisations are keen to expand their presence on the Internet. They do a lot of work in Distribution and Promotion (refer to chapter 5.1). On the other hand, Market Research is graded pretty high following Distribution and Promotion, which displays that organisations are taking advantage of the huge information resources on the Internet to know their customers, supplies, and market through the Internet.

The Internet is a global system of networked computers that allows user-to-user communication and transfer of data files from one machine to any other on the network. It is a convenient tool for Human Resources (refer to chapter 5.4). The survey indicates that the functions of Administration, Benefits, Safety, Payroll, Recruiting are performed better than any other factors in Human Resources. There are more organisations graded from 1 to 4 in Human Resources than in other categories. This situation shows that organisations are trying to get more information about labour markets, employment resources on the global Internet to make tedious routine human resource work easier.

6.2 Limitation the survey

It is a period of major economic change, an era of turbulence and volatility, in which economic life in general is being restructured and reorganized both rapidly and fundamentally. One of the most significant sets of innovations is in the sphere of communication, with the most notable being the Internet. The progression of organizations doing business on the Internet is ever increasing. It is hard to say at

what stage this development is. This study was on attempt to find out the current state of development of Internet business activity. There are some limitations in the survey.

- The period surveyed is surely too short (six weeks only). It needs to be followed over a longer period of the survey.

- Although the survey used the classification of organization types from the Australia Bureau of Statistics, there is no uniform classification for organization types on the Internet. Some organizations could be missed out in the survey.

6.3 Potential topics for further study

Certainly, the amount of organisation types and their business activities are still growing enormously. From this survey, further questions can also be pursued as below:

- Since organisations have already done a lot of work in distribution, promotion, and market research (refer to chapter 5.1), what are the differences when using the Internet versus when not using the Internet?

- Manufacturing has used the Internet widely by using the huge information resources on the Internet to link customers and suppliers through manufacturing product, quality, and cost (refer to chapter 5.2). What tangible benefits can organisations get from the Internet, such as receiving orders directly from the Internet?

- Are there any other considerations that make the organisations undertaking financial activities on the Internet in such a cautious way

(refer to chapter 5.3)? How can these organisations improve their financial activities on the Internet?

- Human Resources on the Internet are doing plenty of work and at a relatively high level (refer to chapter 5.4). Is it possible to make Human Resources activities on the Internet more effective?

There are many open questions on how to get benefits from organizations doing business efficiently on the Internet. A study of business usage patterns over time will be useful for organizations that wish to join and benefit from "the Internet Revolution".

Bibliography

Bibliography

Abelson, A. 11 December 1995, **Up & Down Wall Street: Paradigm Lost?** Barron's.

Archee, R. December 1996, **The Best of the Net for 1996,** Your Computer.

Arnst, C. & Madel, M. 8 April 1996, **The Coming Telscramble,** Business Week.

Australian Bureau of Statistics, August 1993, **Major ABC Classifictions,** Australian Economic Indicators.

Banaghan , M. 17 June 1996, **World Wide Web, or world-wide worry?** Business Review Weekly.

Barrett, A. 22 April 1996, **We have to be prime time**, Business Week.

Baumol, J. W. Blinder, S. A. Gunther, W. A. Hicks, R. J. 1988, **Economics Principles and Policy,** Harcourt Brace Jovanovich Publishers.

Bhawani , S. March 1996, **New US law brings down internal barriers,** Telecommunications, p21-22.

Cortest, A. 4 December 1995, **The Software Revolution,** Business Week.

Cortest, A. & Rebello, K. 25 March 1996, **A Big Squeeze on Big Iron,** Business Week.

Costello, M. April 1996, **Broadcast 2000 - Caught in the Web: The who knew of new media,** Broadcast Engineering.

Coy , P. Hof , D. R. & Judge, C. P. 26 August 1996, **Has the Net finally reached the wall?** Business Week.

December, John Randall, Neil 1995, **The World Wide Web 1996 Unleashed,** smas.net.

Dicken, P. 1992, **Global Shift - The Internationalization of Economic Activity,** Paul Chapman Publishing Ltd.

Edmonson, G. Johnston, M. & Dawley, H. 26 August 1996, **Learning to love the Net,** Business Week.

Ferguson , R. P. Ferguson, J. G. & Rothschild, R. 1993, **Business Economics,** Macmillan.

gopher://gopher.isoc.org:70/00/internet/history/, 22 August 1995, **How the Internet Came to Be.**

gopher://gopher.tic.com//00/matrix/news/v3/inetgrow.312, 23 August 1995, **Internet Growth.**

Guy, K. 18 December 1995, **Darwinism,** Forbes.

Hayes, M. 9 September 1996, **Using the Net to deliver the goods,** Information, p104.

Hayes, R. J. 18 December 1995, **The Internet's First Victim?** Forbes.

Hof , D. R. 15 July 1996, **Netscape: Sitting pretty - or sitting duck?** Business Week.

Hof, D. R. & Lesly, E. 9 September 1996, **Don't surf to us, we'll surf to you,** Business Week.

http://altavista.digital.com/, 31 May 1996, **Search and Display the Results.**

http://calypso.cs.uregina.ca/Lecture/, 15 August 1995, **Computers: From the Past to the Present.**

http://info.isoc.org/guest/zakon/Internet/History/HIT.html, 7 January 1995, **Hobbes' Internet Timeline v2.2.**

http://suzton.iserver.com/section1.html, 15 April 1996, **Business Opportunities Classifieds (Section 1).**

http://www.100hot.com, 11 January 1997.

http://www.boeing.com/quarterly.html, 17 April 1996, **1995 first quarter results.**

http://www.businesssite.com/Entry/BusinessNet/bjinparker2.html, 15 April 1996, **Straight talk about Internet pros and cons.**

http://www.businesssite.com/Entry/...ChooseaBusinessEntity/index.html, 15 April 1996, **How to Choose a Business Entity.**

http://www.businesssite.com/Entry/...YourAccountsReceivable/index.html, Perlmutter, A. G. 15 April 1996, **How to Control Your Accounts Receivable.**

http://www.csun.edu/~mli/iii.html#Point, 17 March 1996, **Integrating Internet Into International Management Education.**

http://www.cts.com/~netsales/n01netzn.html, 13 February 1996, **Net Sales News.**

http://www.deltanet.com/users/dplumley/eticket/section1.html, 15 August 1995, **Why All the Internet?**

http://www.fv.com/info/intro.html, 5 February 1996, **Payment System Summary (Buying and Selling).**

http://www.lightning.net/~softlord/comp.html, 15 August 1995, **A Short History of the Computer.**

http://www.net101.com/reasons.html, 11 January 1997, **20 Reasons to Put Your Business on the World Wide Web.**

http://www.netrex.com/business/basics.html, 22 August 1995, **Internet Size.**

http://www.netrex.com/business/commerce.html, 23 August 1995, **Introduction to Electronic Commerce: Issues, Concerns and the Future.**

http://www.netrex.com/business/usage.html, 23 August 1995, **Commercial Use Strategies.**

http://www.netscape.com/home/internet-directory.html, 17 March 1997.

http://www.newwork.com/Today's_news.html, 17 March 1996, **NewWork News.**

http://www.rtd.com/people/rawn/business.html#introduction, 23 August 1995, **The Business of the Internet.**

http://www.tig.com/IBC/NetStats/LargeComp.html, 22 August 1995, **Large Public Companies with Heavy Presence on the Internet May 1994.**

http://www.webcom.com/~apo/welcome.*html,* 21 April 1996, **Advertising Professionals Online.**

http://www.webtrack.com/adverts/category/category.html, 21 April 1996, **U.S. Leading Advertisers Categories.**

http://www.yahoo.com/Business_and_Economy/, 2 June 1996, **Business and Economy: Companies.**

Hutchinson, W. Sawyer, 1995, **Using Information Technology,** IRWIN.

Jeffery, Y. 4 December 1995, **I.Q. Wars,** Forbes.

Judge , C. P. 3 June 1996, **Surviving the age of the Internet,** Business Week.

Kawassaki, Guy 18 December 1995, **Darwinism**, Forbes, p 280

Kelly, Kevin. 1994, **The Internet Unleashed,** SAMS Publishing.

Krol, E. May 1993, **Request for Comments: 1462 (FYI:20),** Merit Network, Inc., p 4

Laudon , C. K. & Laudon, P. J. 1993, **Management Information Systems - Organisation and Technology,** Macmillan publishing Company.

Love, Barbara, 15 December 1995, **Folio: Plus,** Folio: The Magazine for Magazine Management.

Lynch, C. D. & Rose, M. T. 1993, **Internet System Handbook,** Addison-Wesley Publishing Company, INC.

Major, J. M. 13 November 1995, **Pinpoint a Profit Center and Size of Investment,** Computer Reseller News.

McCarthy, V. 1 December 1995, **The Web: Open for Business,** Datamation.

McLeod, Raymond JR. 1993, **Management Information Systems,** Macmillan Publishing Company

Melinda, Jensen December 1995, **Future World,** Incentive.

Mike, France. 8 April 1996, **ASAP case study: Law.com,** Forbes.

Mohta, P. January 1996, **The Internet and business applications: Prospect and decision points,** Telecommuncations

NorthWestNet, 1995, **The Internet Passport (Fifth Edition),** Prentice Hall PTR.

O'Brien, S. November 1996, **Just Looking,** Business Inside Australia.

Pass, C. & Lowes, B 1994, **Business and Microeconomics,** Routledge.

Pass, C. Lowes, B. & and Ribinson, A. 1995, **Business and Macroeconomics,** Routledge.

Philipson, G. March 1995, **Industrial Strength Internet,** Informationage.

Plunkett, S. 19 August 1996, **Internet - The next generation,** Business Review Weekly, p44.

Prakash, Amarnath Summer 1996, **The Internet as a global Strategic IS tool,** Information Systems Management. P 42

Roberts, J. 18 March 1996, **Closer channel ties pay off as net booms,** Computer Reseller News.

Ryan, W. H. Summer 1996, **Converging on the customer,** Information Systems Management.

Sager, I. 5 June 1995, **Everyone's rushing the Net,** Business Week, p 55.

Sager, I. 30 October 1995, **Lou Gerstner on catching the third wave,** Business Week, p 40

Sager, I. 30 October 1995, **The view from IBM,** Business Week, p 49

Sager, I. & Harris, N. 16 September 1996, **The New I-Way Hog: IBM,** Business Week.

Sager, I. Hof, D. R. & Judge, P. 24 June 1996, **The race is on to simplify,** Business Week.

Saunders, D. 29 April 1996, **A Menu for Those Lost in Space**, The Age.

Schlender, Brent 11 December 1995, **Whose Internet is it, anyway?** Fortune.

Schrader, L. W. January 1996, **1995: The year business found the Internet,** Telecommunications, p 24, 30.

Serwer, E. A. 11 December 1995, **Internet-worth: Why the Frenzy won't Stop Soon,** Fortune.

Shah , R. 23 August 1995, **The Business of the Internet.** http://www.rtd.com/people/rawn/business.html, p 1

Sieged, J.G. Giningliano, J. September 1996, **Business resources on the Internet,** National Public Accountant, p 15

Smart, T. 5 August 1996, **Jack welch's cyber-czar - Can Gary Reiner make GE's info-technology bet pay off?** Business Week.

Varzbani , R. August 1996, **Practical Internet,** LAN Magazine.

Vaughan-Nichols, J. S. March 1996, **On-Line Shoppers: "Just Looking, Thanks",** BYTE.

Verity , W. J. & Hof, D. R. 14 November 1994, **The Internet - How it will change the way you do business,** Business week.

Weiss, G. 20 November 1995, **The Hustlers Queue up on the Net,** Business Week.

Wilder, Clinton 4 December 1995, **Is There Still Time for Prodigy?** Informationweek.

Wildstrom, H. S. 16 September 1996, **A Web-surfing box for peanuts,** Business Week.

Wilson, R. 13 August 1996, **Link to Chinese business,** The Australian.

Woy, J. 1995-1996, **Encyclopedia of Business Information Sources (Tenth Edition),** Gale Research Inc.

Appendix

This is the original data directly taken from the Internet during December 1996 and February 1997. The process, such as making trendline charts, getting the numbers of mean and standard deviation, setting up grades (refer to chapter 4.5), and the results analysis (refer to chapter 5) are all based on the data.

1. Agriculture						
Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	6824	7724	7894	8750	8780	8800
Place (distribution)	267005	267085	267340	721260	722210	722640
Promotion	265308	265648	265972	570110	571840	573270
Market Report	8706	8946	9299	22280	22300	22300
Market Research	40011	40810	43629	98230	98420	98600
Market Intelligence	7812	8062	8359	10890	10910	10930
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	256250	261258	262891	725430	723050	723460
Inventory	228401	234341	234460	595060	595790	596600
Quality	265338	265538	265499	727070	727850	728230
Cost	260615	261115	266552	724230	725030	725440
Job Report	5145	5137	5999	1278	1270	1278
Industrial Engineering	24854	24870	24483	69010	69060	29130
Manufacturing Intelligence	4977	4969	5671	1091	1091	1090
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	6030	6027	6206	5100	5100	5100
Funds Management	6054	6050	7330	6000	6010	6010
Financial Control	7763	7757	8626	7110	7110	7110
Accounting Report	5741	5891	5987	4350	4350	4360
Internal Audit	10237	10235	11413	14500	14500	14520
Financial Intelligence	5107	5101	5929	1200	1210	1209
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	5313	5305	6233	3700	3710	3710
Administration	261812	262312	263039	720600	721410	721840
Compensation	158097	158423	183412	285120	285570	285950
Government Legislation	6081	6441	7102	4750	4750	4750
Recruiting	79597	79816	91761	286760	287390	287820
Benefits	263876	264418	264852	720500	721300	721710
Safety	263222	263522	263188	719270	720080	720510
Labor Relations	5030	5022	5805	1084	1084	1083
Payroll	64474	64568	75541	138650	138890	139110
Personal Records	6352	6350	7319	5290	5290	5290
Human Resources Research	5220	5212	5867	3730	3740	3740
HR Intelligence	5007	4999	5771	1051	1051	1050

2. Mining

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	9713	9873	10049	9040	9070	9090
Place (distribution)	144116	144416	144605	320310	320920	321530
Promotion	123126	123357	8510	318490	319100	319700
Market Report	4702	9732	9812	22530	22550	22550
Market Research	48107	48317	48712	97990	98180	98360
Market Intelligence	10541	10601	10663	11140	11160	11180
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	134766	135064	135150	322130	322700	323280
Inventory	121158	121347	136708	317630	318230	318830
Quality	136524	136619	136697	324120	324700	325430
Cost	9882	11002	11068	321990	322590	323180
Job Report	8459	8453	7800	1862	1862	1861
Industrial Engineering	24439	24519	24584	68810	68860	68930
Manufacturing Intelligence	7482	7502	7573	1675	1675	1673
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	8473	8532	8619	5380	5380	5380
Funds Management	9580	9578	9104	6290	6300	6300
Financial Control	11059	11055	10806	7400	7400	7400
Accounting Report	8918	8911	8256	4640	4640	4650
Internal Audit	9785	9799	13769	14370	14370	14390
Financial Intelligence	7621	7671	7729	1792	1794	1792
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	8800	8794	8311	3990	4000	4000
Administration	12869	121093	137062	319120	319730	320340
Compensation	120927	121158	137552	316950	317560	318170
Government Legislation	8831	8881	8952	5040	5040	5040
Recruiting	74596	79697	91684	286290	286920	287350
Benefits	123053	123262	139804	318830	319430	320020
Safety	121061	121273	137490	318080	318690	319360
Labor Relations	8265	8259	7606	1668	1668	1666
Payroll	64123	64244	75272	138660	138900	139120
Personal Records	9882	9882	9087	5580	5580	5580
Human Resources Research	8705	8699	8098	4020	4030	4030
HR Intelligence	8322	8316	7572	1635	1635	1633

3. Construction

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	7640	7710	7820	10560	10560	10560
Place (distribution)	364347	364748	364955	2412810	2414440	2415590
Promotion	268009	267989	267039	572670	574370	575780
Market Report	9873	9903	9947	24050	24040	24010
Market Research	39317	41481	48434	99460	99620	99780
Market Intelligence	8432	8472	8529	12650	12640	12640
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	1112537	1112507	1112582	4590600	4608760	4623380
Inventory	235779	235810	235886	597410	598100	598900
Quality	1113138	1113145	1113867	4590610	4608790	4623470
Cost	1113876	1113775	1113807	4690210	4693990	4696810
Job Report	5741	5721	5769	1071	1067	1065
Industrial Engineering	17321	17326	17366	71280	71300	71350
Manufacturing Intelligence	6150	6102	5597	884	880	877
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	7139	7096	6593	6870	6840	6820
Funds Management	7296	7252	7106	7770	7750	7730
Financial Control	8591	8541	8554	8870	8840	8820
Accounting Report	6690	6641	6228	6120	6090	6080
Internal Audit	11256	11216	11299	16270	16240	16240
Financial Intelligence	6149	6103	5699	1001	999	996
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	6002	6072	6144	5470	5450	5430
Administration	830240	830310	830345	2203390	2204970	2206410
Compensation	159658	159983	185048	287070	287490	287850
Government Legislation	7317	7271	6882	6560	6530	6510
Recruiting	79822	80003	92914	289100	289700	290110
Benefits	655701	655811	655865	1217530	1218610	1219450
Safety	616863	617068	617060	1417820	1419360	1420580
Labor Relations	6127	6079	5590	877	873	870
Payroll	75675	75715	75762	140320	140530	140730
Personal Records	7594	7552	7023	7060	7030	7010
Human Resources Research	6479	6431	6109	5500	5480	5460
HR Intelligence	6104	6056	5556	844	840	837

4. Electricity						
Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	17301	17351	17406	12650	12670	12690
Place (distribution)	136823	136313	136351	214550	214740	214950
Promotion	114632	11471	131431	213440	213650	213850
Market Report	6851	6801	7012	24210	24220	24220
Market Research	40577	40667	25797	99070	99250	99430
Market Intelligence	19162	19153	18785	14550	14560	14580
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	124110	124210	124291	216530	216740	216920
Inventory	113154	113271	129312	211770	211970	212170
Quality	128593	128573	128596	218480	218660	219090
Cost	112656	112792	118640	217340	217540	217730
Job Report	17141	17123	16408	4693	4691	4691
Industrial Engineering	24333	24362	14692	69020	69060	69130
Manufacturing Intelligence	16996	16978	16174	4478	4476	4475
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	18078	18065	16969	9160	9150	9150
Funds Management	18241	18227	17493	10040	10040	10040
Financial Control	19586	19570	18010	11180	11170	11170
Accounting Report	17538	17519	16511	8420	8410	8420
Internal Audit	9295	9304	20388	17420	17410	17430
Financial Intelligence	17104	17088	16404	4622	4622	4621
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	17246	17408	16567	7770	7770	7770
Administration	111994	112200	128375	212800	213010	213220
Compensation	111788	111946	129062	211080	211290	211500
Government Legislation	18143	18127	17135	8830	8820	8820
Recruiting	79547	79775	92308	286110	286730	287160
Benefits	115252	115388	132011	212260	212460	212650
Safety	129114	129101	129114	211470	211680	211890
Labor Relations	16973	16955	16282	4499	4497	4496
Payroll	63666	63783	74878	139500	139730	139950
Personal Records	17704	17692	17044	9330	9320	9320
Human Resources Research	17365	17347	16349	7800	7800	7800
HR Intelligence	17004	16986	16249	4466	4464	4463

5. Gas

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	11318	11218	11248	8850	8870	8890
Place (distribution)	447130	447232	447318	976360	977430	978300
Promotion	268632	268612	268671	570390	572110	573540
Market Report	12314	12344	12374	22420	22430	22430
Market Research	51537	51521	51585	98380	98560	98740
Market Intelligence	11171	11161	11205	11030	11040	11060
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	443074	443179	443566	958000	959480	960550
Inventory	219444	220032	236803	595220	595940	596750
Quality	450180	450230	450267	960190	961590	962640
Cost	452533	452513	452547	956950	958370	959450
Job Report	11141	11133	8956	1568	1567	1567
Industrial Engineering	26813	26803	26864	69390	69430	69500
Manufacturing Intelligence	10778	10770	8901	1442	1441	1440
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	12103	10567	9803	5240	5230	5230
Funds Management	11647	11642	10384	6140	6140	6140
Financial Control	13049	13043	11308	7250	7240	7240
Accounting Report	10910	421033	9491	4490	4480	4490
Internal Audit	13167	13167	13566	14640	14630	14650
Financial Intelligence	10833	10827	8962	1498	1499	1498
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	9231	9221	9256	3840	3840	3840
Administration	401137	401746	444960	954770	956200	957300
Compensation	11500	11519	186242	285220	285640	286020
Government Legislation	11680	11673	9787	4850	4840	4840
Recruiting	82757	11384	94590	286920	287540	287970
Benefits	445874	445904	445945	954130	955550	956630
Safety	444127	444134	444229	953110	954540	955640
Labor Relations	11068	11060	8894	1435	1434	1433
Payroll	69325	69420	78570	138830	139060	139280
Personal Records	12205	12201	10004	5430	5420	5420
Human Resources Research	11119	11111	9268	3870	3870	3870
HR Intelligence	11142	11134	8892	1402	1401	1400

6. Water Supply

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	17403	17411	17637	10090	10120	10140
Place (distribution)	49672	49702	49743	57110	57250	57300
Promotion	42540	42576	18429	55580	55590	55630
Market Report	16007	16017	6523	21370	21390	21390
Market Research	36286	36335	45085	53490	53490	53540
Market Intelligence	17390	17389	16599	9980	10000	10020
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	43585	43545	43593	59680	59650	59670
Inventory	41510	41528	45223	54050	54050	54090
Quality	45843	45913	45927	60640	60620	60710
Cost	42510	42540	21174	59500	59500	59530
Job Report	16690	16683	16249	2918	2917	2917
Industrial Engineering	21710	21771	21339	51930	51940	51990
Manufacturing Intelligence	16560	16581	17307	2634	2633	2632
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	17191	17189	16458	6310	6310	6310
Funds Management	17126	17123	16782	7300	7310	7310
Financial Control	18635	18631	18647	8430	8430	8430
Accounting Report	15860	15854	15762	5770	5770	5780
Internal Audit	6701	6708	15856	13590	13590	13610
Financial Intelligence	16667	16662	17423	2847	2848	2847
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	17000	17034	17928	5260	5270	5270
Administration	39318	39359	43939	55190	55200	55250
Compensation	39730	39751	44872	53330	53340	53390
Government Legislation	17740	17707	17729	6180	6180	6180
Recruiting	37311	37352	41597	52590	52600	52650
Benefits	43298	43327	46622	54560	54560	54590
Safety	39180	39229	44069	53750	53760	53870
Labor Relations	16530	16583	17458	2723	2722	2721
Payroll	36870	36893	41298	53240	53250	53300
Personal Records	15239	15239	16242	6170	6170	6170
Human Resources Research	16937	16930	17583	5120	5130	5130
HR Intelligence	16567	16560	17425	2691	2690	2689

7. Manufacturing

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	9412	9430	9531	9810	9820	9830
Place (distribution)	433127	433130	433360	1227580	1228830	1229720
Promotion	268120	268200	268225	571770	573480	574900
Market Report	13088	13087	12247	23450	23450	23440
Market Research	50645	50712	50724	99200	99370	99540
Market Intelligence	9983	10030	10197	12060	12060	12070
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	430418	430508	431038	1308950	1303210	1304020
Inventory	235639	235719	235775	596380	597090	597890
Quality	432191	432201	432539	1209220	1210440	1211200
Cost	432841	433043	433179	1163560	1166220	1168350
Job Report	8137	8123	7472	1305	1302	1302
Industrial Engineering	25340	25344	25392	70440	70470	70530
Manufacturing Intelligence	7206	7246	7285	1192	1189	1188
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	9075	9065	8075	7270	6250	6240
Funds Management	8034	9068	8663	7170	7160	7150
Financial Control	10135	10105	10177	8280	8260	8250
Accounting Report	8607	8592	7891	5520	5500	5500
Internal Audit	12891	12882	13296	15670	15650	15660
Financial Intelligence	8075	8063	7362	1235	1234	1233
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	7782	7771	7807	4870	4860	4850
Administration	62031	62011	62023	1161710	1164380	1166530
Compensation	185612	185628	185620	286260	286690	287060
Government Legislation	9040	9037	8500	5810	5790	5780
Recruiting	93886	94014	94041	287810	288420	288840
Benefits	433483	433530	433564	1161680	1164340	1166480
Safety	432326	432427	432579	1161090	1163760	1165910
Labor Relations	8063	8049	7242	1185	1182	1181
Payroll	76941	76968	76990	139730	139950	140160
Personal Records	9487	9477	8681	6460	6440	6430
Human Resources Research	8384	8370	7708	4900	4890	4880
HR Intelligence	8040	8026	7244	1152	1149	1148

8. Accommodation

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	6590	6611	8311	8940	8970	8990
Place (distribution)	110094	110342	125147	352950	354090	355110
Promotion	104700	104729	119899	350920	352080	353090
Market Report	9686	9697	8932	22430	22450	32450
Market Research	40067	40148	44527	98050	98240	98420
Market Intelligence	7106	7117	8896	11040	11060	11080
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	116538	116608	116627	354040	355160	356150
Inventory	102802	102930	118451	349560	350710	351720
Quality	118642	118713	118794	356540	357670	358830
Cost	118368	118409	118441	355640	356790	357790
Job Report	4530	4570	5950	1642	1641	1642
Industrial Engineering	23858	23846	23749	68840	68890	68960
Manufacturing Intelligence	4460	4471	5762	1455	1454	1454
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	5510	5536	6833	5270	5270	5270
Funds Management	5670	5699	7412	6170	6180	6180
Financial Control	7190	7187	9045	7280	7280	7280
Accounting Report	5010	5028	6409	4520	4520	4530
Internal Audit	8760	8773	11935	14570	14570	14590
Financial Intelligence	4506	4534	5880	1572	1573	1573
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	4836	4909	6322	3870	3880	3880
Administration	103040	103081	118104	351170	352330	353350
Compensation	102810	102826	119083	348720	349880	350900
Government Legislation	5660	5689	7194	4940	4940	4940
Recruiting	78620	78611	91127	286330	286960	287390
Benefits	105443	105481	121214	350570	351720	352720
Safety	119982	119112	119198	349830	350990	352010
Labor Relations	4418	4406	5756	14480	1447	1447
Payroll	63222	63286	74422	138740	138980	139200
Personal Records	5971	5999	7322	5460	5460	5460
Human Resources Research	4796	4810	6255	3900	3910	3910
HR Intelligence	4446	4432	5722	1415	1414	1414

9. Cafes

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	6326	6337	8675	8410	8440	8450
Place (distribution)	31480	31505	33905	66420	66460	66540
Promotion	267914	268016	32430	65030	65080	65150
Market Report	8910	8984	9113	21050	21070	21070
Market Research	22340	22381	25845	63030	63070	63150
Market Intelligence	6780	6776	8830	9660	9680	9700
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	28643	28707	28898	68930	68940	68990
Inventory	27040	27634	30410	63340	63380	63450
Quality	31461	31511	31609	69700	69720	69790
Cost	32462	32432	32488	68760	68800	68860
Job Report	4436	4400	6443	1439	1439	1438
Industrial Engineering	21870	21881	24898	61260	61310	61390
Manufacturing Intelligence	4270	4297	6486	1250	1250	1248
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	5321	5388	7327	4740	4740	4730
Funds Management	5568	5529	7847	5020	5630	5620
Financial Control	6972	6942	9510	6740	6740	6730
Accounting Report	4803	4844	6841	3990	3990	3990
Internal Audit	6199	6415	10596	13270	13270	13290
Financial Intelligence	4364	4386	6603	1369	1371	1369
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	4750	4761	7070	3340	3350	3340
Administration	28501	28712	28501	64370	64420	64500
Compensation	25810	25836	30085	62820	62870	62950
Government Legislation	5542	5557	7941	4420	4420	4410
Recruiting	23332	23407	26755	61820	61870	61950
Benefits	33145	33182	33261	63860	63900	63960
Safety	25386	25477	28510	63050	63090	63170
Labor Relations	4340	4306	6528	1245	1245	1243
Payroll	22981	22952	26461	62610	62650	62730
Personal Records	7576	7621	7663	4900	4900	4890
Human Resources Research	4480	4669	7013	3370	3380	3370
HR Intelligence	4270	4283	6494	1212	1212	1210

10. Restaurant						
Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	5531	5601	5630	7520	7540	7560
Place (distribution)	308572	308622	308677	1005590	1007200	1008940
Promotion	26457	26487	265055	569610	571170	572690
Market Report	8940	8903	8348	21010	21030	21060
Market Research	41866	42041	42079	97100	97240	97420
Market Intelligence	6120	6197	6389	9620	9640	9690
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	304671	304773	304833	1009990	1011590	1013370
Inventory	233386	233476	233557	594470	595130	595950
Quality	309138	309233	309317	1010280	1011890	1013610
Cost	310548	310618	310753	1008350	1009970	1012050
Job Report	3746	3705	3379	758	757	770
Industrial Engineering	23948	23915	19126	68320	68350	68420
Manufacturing Intelligence	3327	3384	3192	571	570	582
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	4506	4669	4236	3830	3830	3860
Funds Management	4785	4806	4762	4730	4740	4770
Financial Control	242811	242945	6452	5840	5840	5870
Accounting Report	4122	4160	3811	3080	3080	3120
Internal Audit	9148	9131	9497	13230	13230	13280
Financial Intelligence	3601	3640	3309	689	689	701
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	4006	4041	3706	2430	2440	2470
Administration	286120	286170	305406	1005910	1007540	1009330
Compensation	182132	182124	182415	284270	284450	284840
Government Legislation	4820	4872	4539	3510	3510	3510
Recruiting	90614	90644	90678	286070	286600	287120
Benefits	306072	306129	306409	1006130	1007750	1009470
Safety	305013	305132	305199	1005230	1006860	1008570
Labor Relations	3506	3590	3158	564	563	575
Payroll	63462	63550	73722	137720	137920	138170
Personal Records	5106	5027	4743	4020	4020	4050
Human Resources Research	3907	3950	3692	2460	2470	2500
HR Intelligence	3542	3567	3151	531	530	542

11. Communication Service

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	6836	6877	6997	9200	9210	9220
Place (distribution)	17648	17935	17944	15730	15740	15750
Promotion	16230	16338	16328	14300	14330	14330
Market Report	6303	6373	6408	9320	9530	9365
Market Research	12343	12313	12354	12230	92250	12260
Market Intelligence	4326	6926	7673	8300	8320	8340
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	9541	9517	10006	17490	17490	17470
Inventory	11082	11122	11164	12400	12420	12420
Quality	16782	16883	17039	18570	18570	18610
Cost	21722	21825	21864	18910	18930	18920
Job Report	4615	4605	4646	3365	3321	3363
Industrial Engineering	8902	8922	8992	10300	10330	10340
Manufacturing Intelligence	1630	4220	4460	3374	3373	3372
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	2685	5279	5530	5700	5690	5680
Funds Management	2874	5439	5467	6580	6580	6570
Financial Control	7691	7701	7736	7710	7700	7690
Accounting Report	2181	4770	5106	4750	4740	4740
Internal Audit	5207	7698	7692	8800	8830	8840
Financial Intelligence	1684	4276	4577	3738	3738	3737
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	2061	4651	5020	6730	7630	7620
Administration	9216	9248	9319	12830	12860	12870
Compensation	18029	18121	18211	11810	11840	11850
Government Legislation	3730	5480	5890	8060	8050	8040
Recruiting	9208	9207	8887	10660	10690	10700
Benefits	13129	13119	13164	12380	12400	12390
Safety	10375	10416	10617	11570	11600	11670
Labor Relations	4190	4197	4453	4131	4130	4129
Payroll	14174	14175	13895	12300	12330	12340
Personal Records	5708	5739	6096	4830	4820	4810
Human Resources Research	4553	4560	4986	7000	7000	6990
HR Intelligence	4167	4174	4419	4098	4097	4096

12. Cultural Service						
Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	2475	2488	2888	5010	5010	5000
Place (distribution)	15636	15606	16159	7880	7860	7860
Promotion	12504	12521	12548	6610	6610	6600
Market Report	3529	3528	2775	2970	2970	2970
Market Research	5681	5669	8508	4860	4850	4850
Market Intelligence	3001	3011	3558	3200	3200	3200
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	6349	6319	6435	9980	9950	9920
Inventory	8356	8338	7513	4590	4580	4570
Quality	17694	17767	17778	11740	11710	11840
Cost	35856	35886	32961	13160	13150	13130
Job Report	394	394	521	459	522	524
Industrial Engineering	4674	4673	5151	2600	2600	2600
Manufacturing Intelligence	302	302	334	335	335	336
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	1357	1361	1405	2650	2650	2650
Funds Management	1521	1524	1991	3190	3190	3190
Financial Control	3014	3016	2624	4490	4490	4490
Accounting Report	853	852	980	711	711	712
Internal Audit	4124	4122	4237	2200	2200	2200
Financial Intelligence	356	358	451	453	454	455
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	734	734	896	897	898	899
Administration	5948	5994	5559	5120	5120	5120
Compensation	15306	15361	14951	4110	4110	4110
Government Legislation	1565	1566	767	2340	2340	2340
Recruiting	5336	5328	4914	2850	2850	2850
Benefits	9333	9315	9809	4680	4670	4650
Safety	6329	6316	7131	3750	3750	3760
Labor Relations	278	279	325	326	326	327
Payroll	10779	10793	10015	4990	4990	4990
Personal Records	1821	1825	1985	1307	1306	1307
Human Resources Research	642	642	821	862	864	372
HR Intelligence	256	256	293	295	295	296

13. Recreation Service

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	2881	2901	2946	5520	5520	5510
Place (distribution)	16385	16425	16462	8180	8160	8160
Promotion	12732	12702	12723	6910	6910	6900
Market Report	3507	3810	2842	3360	3360	3360
Market Research	5742	8634	8616	5170	5160	5160
Market Intelligence	3063	3281	3616	3770	3770	3770
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	6339	6441	6472	10280	10250	10220
Inventory	8603	8623	7569	4890	4880	4870
Quality	17185	17215	17303	12040	12010	12130
Cost	32714	32763	33809	13460	13450	13430
Job Report	456	736	579	581	581	325
Industrial Engineering	4759	4888	5325	2900	2900	2900
Manufacturing Intelligence	365	644	392	394	394	394
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	1419	1703	1462	2950	2950	2850
Funds Management	1583	1866	2049	3530	3530	3530
Financial Control	3076	3358	3681	4900	4900	4900
Accounting Report	915	1194	1038	841	841	841
Internal Audit	4179	4339	4299	2540	2540	2540
Financial Intelligence	418	700	509	521	513	513
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	796	1076	953	955	956	956
Administration	5436	5518	5565	5420	5420	5420
Compensation	15701	15768	15081	4410	4410	4410
Government Legislation	1625	1907	1824	2640	2640	2640
Recruiting	5632	5646	5017	3150	3150	3150
Benefits	9402	9514	9868	4980	4970	4950
Safety	6298	6380	7147	4050	4050	4060
Labor Relations	341	621	385	387	387	387
Payroll	10966	10608	10108	5290	5290	5290
Personal Records	1882	2167	2043	2300	2300	2300
Human Resources Research	704	984	919	842	923	816
HR Intelligence	318	598	351	354	354	354

14. Finance

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	7546	7586	7610	9440	9460	4940
Place (distribution)	474587	474675	474744	1187630	1189460	1191450
Promotion	6153	6203	6218	571250	572810	574540
Market Report	9835	9813	9839	22910	22930	22940
Market Research	40543	48611	48632	98980	99120	99330
Market Intelligence	8321	8309	8295	11540	11560	11580
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	471789	471859	471920	1191030	1192820	1194780
Inventory	235211	235119	235181	596130	596790	59770
Quality	477469	477579	477622	1191740	1193570	1196120
Cost	477543	477510	477593	1190650	1192490	1194460
Job Report	5855	5833	5399	1738	1738	1730
Industrial Engineering	22224	22211	22254	70120	70150	70220
Manufacturing Intelligence	5787	5215	5215	1565	1565	1562
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	6144	6171	6163	5750	5750	5750
Funds Management	6794	6775	6727	6620	6630	6630
Financial Control	8302	8343	8371	7760	7760	7760
Accounting Report	6337	6314	5854	5000	5000	5010
Internal Audit	11104	11087	10754	15150	15150	15180
Financial Intelligence	5769	5749	5329	1669	1670	1667
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	5704	5741	5771	4350	4360	4360
Administration	477467	477517	477551	1150270	1151360	1153390
Compensation	184005	184031	184017	285870	286250	286720
Government Legislation	6472	6512	6535	5430	5430	5430
Recruiting	92186	92246	92298	287700	288230	288690
Benefits	473213	473234	473290	1186930	1188770	1190740
Safety	472513	472603	472635	1186130	1187980	1189970
Labor Relations	5824	5802	5205	1558	1558	1555
Payroll	65261	65338	75267	139580	139780	140010
Personal Records	7282	7264	6746	5940	5940	5940
Human Resources Research	6127	6105	5739	4380	4390	4390
HR Intelligence	5801	5779	5174	1525	1525	1522

15. Insurance

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	5311	5832	5916	7260	7280	7330
Place (distribution)	79008	79568	885462	2410470	2411790	2413200
Promotion	228301	228762	265418	569490	571050	573130
Market Report	7341	8481	8505	20740	20760	20790
Market Research	33677	33787	33827	96830	96970	97180
Market Intelligence	5208	5228	6778	9340	9360	9380
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	330200	331204	332107	1301780	1302840	1304240
Inventory	233185	233395	233824	594190	594850	595890
Quality	463818	474519	474563	1284780	1286660	1280350
Cost	469861	472061	473646	1282470	1284370	1286900
Job Report	3217	3207	4019	511	511	515
Industrial Engineering	18305	22043	21407	68050	68080	68190
Manufacturing Intelligence	3126	3116	3847	324	324	327
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	3966	3960	4662	3560	3560	3680
Funds Management	5182	5202	5247	4460	4470	4490
Financial Control	5509	5899	6700	5560	5560	5560
Accounting Report	4591	4389	4402	2810	2810	2840
Internal Audit	8003	7998	9674	12960	12960	13020
Financial Intelligence	3133	3125	3950	442	443	447
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	3991	4281	4317	2160	2170	2190
Administration	821021	821121	828891	2201140	2202490	2204350
Compensation	181872	182076	182115	290140	290390	290750
Government Legislation	3974	3965	5012	3250	3250	3270
Recruiting	87842	88802	91057	285920	286452	286970
Benefits	378150	486153	653211	1297040	1297950	1299840
Safety	548715	549018	615063	1410480	1412100	1414740
Labor Relations	3109	3099	3826	317	317	320
Payroll	68416	68716	73394	137450	137650	137950
Personal Records	4401	4395	4747	3750	3750	3770
Human Resources Research	3419	3409	3935	2190	2200	2220
HR Intelligence	3086	3076	3806	284	284	287

16. Personal Service						
Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	9725	9827	10619	15600	15620	15650
Place (distribution)	25045	25105	25156	37320	37410	37490
Promotion	26967	26017	26024	36250	36360	36430
Market Report	10472	10521	10557	20450	20470	20480
Market Research	19078	19127	19143	34070	34190	34280
Market Intelligence	17001	17121	17153	9060	9080	9100
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	18492	18500	18670	38390	38470	38510
Inventory	20581	20610	20622	34020	34120	34190
Quality	21242	21343	21312	37760	37850	37900
Cost	24428	24528	24579	38300	38400	38460
Job Report	9107	12067	14123	5371	5366	5363
Industrial Engineering	10401	10521	10548	32200	32310	32390
Manufacturing Intelligence	11886	11975	13936	6246	6241	6236
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	12936	13029	15002	12390	12390	12380
Funds Management	13102	13194	15578	12820	12830	12830
Financial Control	15801	15931	15978	14480	14480	14470
Accounting Report	14461	14511	14577	11150	11150	11160
Internal Audit	6064	6069	13010	12670	12670	12710
Financial Intelligence	11940	12031	14052	6363	6359	6355
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	12317	12406	14496	14760	14770	14750
Administration	18602	18721	18737	38780	34890	34970
Compensation	27585	27635	27698	33650	33760	33840
Government Legislation	13148	13238	15366	13530	13530	13520
Recruiting	18262	18302	18338	32420	32530	32610
Benefits	23148	23218	23241	34140	34240	34300
Safety	19924	20022	20095	33410	33520	33610
Labor Relations	11863	11952	13929	6540	6535	6530
Payroll	22682	22672	22707	34160	34270	34350
Personal Records	15532	15512	15578	10730	10730	10730
Human Resources Research	12226	12315	13240	13250	13260	13250
HR Intelligence	11840	11929	13895	6507	6502	6497

17. Other Service

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	3138	3132	3102	10600	10620	10640
Place (distribution)	18207	18227	18242	17310	17300	17310
Promotion	21617	21715	21760	16040	16050	10050
Market Report	99813	10002	10076	19630	19650	19660
Market Research	19617	19735	19795	14140	14140	14150
Market Intelligence	4499	8701	14702	8240	8260	8280
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	17316	17345	17187	19230	19210	19180
Inventory	19023	19103	19174	14020	14020	14020
Quality	17833	18033	18043	20400	20380	20950
Cost	24242	24313	24304	20730	20730	20720
Job Report	5387	11072	13001	4074	5301	6737
Industrial Engineering	11531	11981	12107	12020	12030	12040
Manufacturing Intelligence	9188	10981	12817	7023	3686	8912
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	10073	10102	10157	8520	8520	8510
Funds Management	11440	12196	11026	8130	8140	8130
Financial Control	14870	14903	14920	9970	9970	9960
Accounting Report	8771	8801	8832	6030	6030	6030
Internal Audit	3146	6122	1333	11850	11850	11890
Financial Intelligence	8586	11037	12503	8776	6226	10052
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	11007	11406	10257	9130	9140	9130
Administration	17341	17412	17563	14550	14560	14570
Compensation	26504	26540	26599	13540	13550	13560
Government Legislation	12219	12238	10176	9500	9500	9490
Recruiting	16623	16703	16746	12280	12290	12300
Benefits	19809	19829	19956	14110	14110	14100
Safety	14442	14513	14602	13180	13190	13210
Labor Relations	5171	10958	12808	11471	4710	10997
Payroll	22117	22210	22274	14390	14400	14410
Personal Records	7622	12500	14460	5860	5860	5850
Human Resources Research	8254	11318	7704	8440	8480	8440
HR Intelligence	7620	10993	12776	11439	8599	6343

18. Property Service

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	2372	2402	2439	16550	16560	16550
Place (distribution)	15180	15155	16831	18870	18860	18860
Promotion	13369	13370	13895	17640	17650	17640
Market Report	4921	4932	4016	14000	14010	14010
Market Research	5828	5820	9101	15900	15900	15900
Market Intelligence	3151	3163	4786	14500	14510	14510
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	7549	7641	7625	20830	20810	2077
Inventory	8681	8741	8824	15540	15540	1553
Quality	18135	18245	18299	22000	21980	22660
Cost	33801	33941	33121	24170	24170	24150
Job Report	544	546	1750	1755	1258	1757
Industrial Engineering	4866	4867	6004	13630	13640	13640
Manufacturing Intelligence	452	454	1563	1568	1569	1569
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	1507	1513	2634	13680	13690	13690
Funds Management	1671	1676	3220	14360	14370	14370
Financial Control	3165	3169	4852	15630	15640	15640
Accounting Report	1003	1004	2209	12560	12570	12570
Internal Audit	4368	4368	5468	13270	13280	13280
Financial Intelligence	1581	1601	1680	1686	1162	1689
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	2131	2104	2125	12280	12300	12300
Administration	2738	6719	6712	16020	16030	16030
Compensation	16241	16311	16369	15070	15080	15080
Government Legislation	1715	1718	2996	13370	13380	13380
Recruiting	5486	5480	6144	13880	13890	13890
Benefits	11232	11263	11317	15520	15510	15500
Safety	7986	8006	8654	14710	14720	14780
Labor Relations	429	431	1556	1561	1562	1562
Payroll	11059	11050	11318	16020	16030	16030
Personal Records	1971	1977	3214	13270	13280	13280
Human Resources Research	792	794	1709	12310	12330	12330
HR Intelligence	406	408	1522	1528	637	1529

19. Business Service						
Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	4740	4810	4865	8550	8570	8590
Place (distribution)	20259	20365	20905	34450	34410	34500
Promotion	20149	20170	20063	33110	33090	33170
Market Report	8001	8093	8078	20410	20430	20440
Market Research	12304	12314	12498	30610	30580	30670
Market Intelligence	7528	7620	7679	9020	9050	9060
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	14610	14642	14566	36110	36060	36110
Inventory	15521	15623	15767	31080	31050	31130
Quality	20050	20100	20160	36910	36840	36900
Cost	21472	22493	23296	36330	36300	36370
Job Report	5842	5913	5983	1176	1176	1176
Industrial Engineering	12282	12288	12377	29040	29020	29110
Manufacturing Intelligence	3592	3591	5807	984	983	983
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	6717	6715	6725	4520	4520	4529
Funds Management	6947	6951	6950	5680	5680	5680
Financial Control	8725	8846	8823	6870	6860	6860
Accounting Report	5610	5612	5687	3810	3820	3820
Internal Audit	9208	9228	9278	12630	12640	12670
Financial Intelligence	5902	5913	5923	1107	1107	1108
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	6321	6319	6378	3490	3490	3490
Administration	14193	14202	14156	31690	31670	31760
Compensation	22114	22118	22296	30600	30580	30670
Government Legislation	7173	7203	7233	4570	4560	4560
Recruiting	13179	13182	13115	29410	29390	29480
Benefits	17821	17828	17932	31250	31210	31290
Safety	15350	15376	15426	30320	30300	30400
Labor Relations	5764	5814	5831	982	981	981
Payroll	16113	16155	16299	30950	30930	31020
Personal Records	6542	6612	6641	4700	4700	4700
Human Resources Research	6197	6217	6230	3510	3510	3510
HR Intelligence	5729	5732	5797	949	948	948

20. Retail Trade

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	15281	15310	15338	9310	9340	9360
Place (distribution)	24519	24681	24738	28670	28700	28720
Promotion	24621	24820	24884	27340	27390	27400
Market Report	11964	11974	9888	19580	19600	19610
Market Research	18127	18119	19984	25200	25260	25290
Market Intelligence	15675	15687	15889	8190	8220	8230
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	18275	18315	18385	30590	30610	30590
Inventory	20832	20691	19748	25300	25340	25350
Quality	26902	26848	25549	31760	31760	32480
Cost	29856	29834	29378	33680	33720	33720
Job Report	13081	13083	12979	3857	3857	3855
Industrial Engineering	17108	17109	16933	23320	23370	23390
Manufacturing Intelligence	12989	12991	12794	3919	3918	3916
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	14042	14048	13863	6130	6130	6130
Funds Management	14207	14212	14447	6840	6850	6850
Financial Control	15693	15697	16067	7980	7980	7980
Accounting Report	13539	13540	13436	5190	5200	5200
Internal Audit	6011	6018	11976	21700	21750	21770
Financial Intelligence	13044	13048	12912	4037	4037	4036
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	14416	13418	13353	5360	5370	5370
Administration	18050	13138	17551	25770	25820	25840
Compensation	27441	27502	27022	24800	24850	24870
Government Legislation	14244	14247	14215	6450	6450	6450
Recruiting	17722	17718	17218	23560	23610	23630
Benefits	19982	19970	20835	25470	25500	25510
Safety	18188	18180	18541	24540	24590	24620
Labor Relations	12967	12969	12787	4012	4011	4009
Payroll	14945	14952	19398	25600	25650	25670
Personal Records	14509	14515	14443	5800	5800	5800
Human Resources Research	13330	13332	13319	5230	5240	5240
HR Intelligence	12944	12946	12754	3979	3978	3976

21. Transport

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	14608	14710	14768	11110	11140	11160
Place (distribution)	409872	401075	401131	765660	766690	767520
Promotion	269845	269950	270041	571490	573300	575280
Market Report	19240	19240	16710	24690	24710	24720
Market Research	52651	52715	52724	100090	100310	100470
Market Intelligence	15547	15578	14806	13300	13330	13340
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	395656	395774	395877	769610	770630	771420
Inventory	237818	237919	237981	595720	596530	597400
Quality	399146	399357	399354	770290	771290	772230
Cost	399820	399921	399901	770510	771550	772360
Job Report	14532	14521	13193	3668	3668	3666
Industrial Engineering	29507	29576	29525	70620	70650	70740
Manufacturing Intelligence	14360	14349	13006	3481	3480	3478
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	15509	15502	13472	7510	7510	7510
Funds Management	15013	15005	13982	8410	8420	8420
Financial Control	16576	16567	15038	9520	9520	9520
Accounting Report	13144	13201	13267	6760	6770	6770
Internal Audit	18425	18420	18605	16790	16800	16830
Financial Intelligence	14414	14405	12892	3533	3533	3532
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	13241	13310	13339	6110	6120	6120
Administration	296814	397015	397041	764880	765930	766760
Compensation	104825	165150	188521	285940	286380	286880
Government Legislation	14110	14132	13730	7100	7100	7199
Recruiting	96505	96615	96655	288060	288680	289090
Benefits	399311	399441	399524	764820	765850	766670
Safety	396872	377079	397103	763540	764590	765420
Labor Relations	14417	14406	12999	3408	3407	3405
Payroll	81314	81517	81596	140440	140650	140920
Personal Records	15454	15447	13946	7700	7700	7700
Human Resources Research	14422	14411	13300	6140	6150	6150
HR Intelligence	14409	14398	13110	3441	3440	3438

22. Storage

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	15962	15036	15153	10110	10140	10140
Place (distribution)	485833	486032	486184	921340	922500	423830
Promotion	270755	270851	270921	571220	573030	574990
Market Report	17894	17888	15906	23670	23690	23680
Market Research	55718	55788	55865	99410	99630	99770
Market Intelligence	16783	16776	15736	12280	12310	12300
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	483029	483194	483343	924590	925740	927050
Inventory	237814	238041	238022	596160	596970	597820
Quality	489812	489912	489929	926600	937740	929030
Cost	490360	490416	490524	924560	925730	927040
Job Report	14990	14972	14175	2558	2559	2556
Industrial Engineering	30617	30611	30763	70360	70390	70460
Manufacturing Intelligence	14835	14818	14303	2442	2442	2439
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	14336	14323	14552	6490	6490	6470
Funds Management	15639	15625	15375	7390	7400	7300
Financial Control	15301	15411	15524	8500	8500	8480
Accounting Report	14935	14917	14632	5740	5750	5730
Internal Audit	17242	17311	17420	15890	15900	15910
Financial Intelligence	14889	14874	14272	2489	2490	2488
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	14523	14506	14000	5090	5100	5080
Administration	484821	484902	484975	922220	923400	924730
Compensation	165190	165508	189092	986300	286740	287220
Government Legislation	15642	15626	15332	6100	6100	6080
Recruiting	85450	85643	97645	288070	288690	289080
Benefits	485747	485814	486079	922180	923340	924660
Safety	484412	484511	484633	921080	922260	923590
Labor Relations	14969	14951	14296	2435	2435	2432
Payroll	72775	72854	82216	139690	139900	140150
Personal Records	16028	16015	14858	6680	6680	6660
Human Resources Research	15125	15108	13968	5120	5130	5110
HR Intelligence	15201	15183	14265	2402	2402	2399

23. Wholesale Trade

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	6981	7001	7052	6840	6870	6890
Place (distribution)	21163	21203	21256	17100	17130	17140
Promotion	20114	20144	18889	15280	15330	15330
Market Report	9632	9628	7385	10650	10700	10710
Market Research	12511	12497	14210	13260	13300	13310
Market Intelligence	7910	7918	7148	8210	8240	8250
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	13012	13113	13226	19200	19220	19190
Inventory	14056	14056	13984	13300	13340	13340
Quality	23080	23019	21986	20960	20960	21060
Cost	29764	29811	29907	22110	22150	22140
Job Report	5842	5840	4956	1354	1355	1355
Industrial Engineering	11305	11360	10990	7250	11550	11560
Manufacturing Intelligence	5747	5745	4788	1145	1145	1145
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	6635	6637	5713	3150	3150	3150
Funds Management	6772	6773	6154	4040	4050	4050
Financial Control	8292	8292	7893	5270	5270	5270
Accounting Report	5936	5933	4904	2390	2400	2400
Internal Audit	9443	9438	9502	10130	10180	10190
Financial Intelligence	5805	5805	4906	1285	1286	1287
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	6182	6180	5371	1729	1730	1730
Administration	12786	12785	12396	14200	14250	14260
Compensation	21228	21516	13222	12800	12850	12860
Government Legislation	7000	6999	6212	2990	2990	2990
Recruiting	12039	12029	11613	11820	11870	11880
Benefits	15828	15809	15872	13900	13930	13930
Safety	13111	13097	13599	12970	13020	13040
Labor Relations	5728	5726	4804	1160	1160	1160
Payroll	16515	16506	15437	13580	13630	13640
Personal Records	6586	6588	5912	3300	3300	3300
Human Resources Research	6088	6086	5313	1677	1510	1679
HR Intelligence	5705	5703	4770	1127	1127	1127

24. Education

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	6446	6526	6568	9060	9080	9070
Place (distribution)	884740	884839	885038	2412140	2413630	2414830
Promotion	263476	263582	263524	569660	571470	573440
Market Report	8683	8648	8894	22540	22550	22530
Market Research	46226	46327	46386	88320	98530	98660
Market Intelligence	6087	6068	7247	11150	11170	11150
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	1761467	1761508	1761898	5821050	5827010	5833720
Inventory	231878	231807	232012	594670	595480	596340
Quality	1498297	1498313	1498503	4035870	4039080	4042730
Cost	1286486	1296587	1296638	2166940	2170410	2173420
Job Report	3609	3561	4267	831	830	825
Industrial Engineering	23180	23282	23260	60810	69830	69890
Manufacturing Intelligence	4001	4011	4088	644	642	637
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	4504	4510	5147	5360	5350	5320
Funds Management	4717	4690	5739	6260	6260	6230
Financial Control	6156	6115	7316	7370	7360	7330
Accounting Report	4704	4721	4734	4610	4610	4580
Internal Audit	10142	10111	10184	14740	14740	14740
Financial Intelligence	4001	4117	4197	762	761	757
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	4584	4601	4650	3960	3960	3930
Administration	828285	828294	828766	2236300	2238990	2241660
Compensation	181330	181415	181460	285370	285800	286270
Government Legislation	5412	5432	5497	5050	5040	5010
Recruiting	89738	89639	89738	286990	287610	288010
Benefits	652628	652631	652660	1214910	1216000	1217060
Safety	614148	614159	614274	1393500	139511-	1396480
Labor Relations	3491	3446	4081	637	635	630
Payroll	72045	73105	73122	138900	139100	139360
Personal Records	5721	5701	5722	5550	5540	5510
Human Resources Research	4415	4607	4607	3990	3990	3960
HR Intelligence	3468	4047	4647	604	602	597

25. Government Administration

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	4089	4101	4759	7250	7250	7240
Place (distribution)	16020	16072	16133	10240	10220	10220
Promotion	14321	14411	14531	8950	8950	8940
Market Report	5081	5081	4599	5210	5210	5210
Market Research	7247	7237	10136	7210	7210	7210
Market Intelligence	4611	4621	5432	5120	5120	5120
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	7819	7899	8003	12340	12310	12270
Inventory	9024	9111	9189	6940	6940	6930
Quality	18730	17641	17113	14100	14050	14180
Cost	29543	29623	29703	15380	15370	15350
Job Report	2007	2007	2396	2403	2404	2404
Industrial Engineering	6248	6247	6956	4950	4950	4950
Manufacturing Intelligence	1914	1914	2209	2216	2216	2216
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	2922	2973	3277	5010	5010	5010
Funds Management	3134	3137	3868	5190	5200	5200
Financial Control	4614	4616	5480	6410	6410	6410
Accounting Report	2466	2465	2854	3370	3380	3380
Internal Audit	5647	5645	5904	4530	4530	4530
Financial Intelligence	1967	1971	2326	2334	2335	2336
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	2342	2342	2768	3610	3620	3620
Administration	6130	6134	6999	7480	7480	7480
Compensation	16748	16810	16835	6400	6400	6400
Government Legislation	3170	3171	3628	4700	4700	4700
Recruiting	6920	6913	6785	5200	5200	5200
Benefits	11218	11310	11347	7040	7020	7010
Safety	8047	8117	8199	6110	6110	6120
Labor Relations	1891	1891	2200	5760	2207	2207
Payroll	12172	12168	11730	7340	7340	7340
Personal Records	3431	3435	3856	4220	4220	4220
Human Resources Research	2254	2254	2463	3640	3650	3650
HR Intelligence	1869	1869	2168	2176	2176	2176

26. Defense						
Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	16386	16392	17113	11500	11530	11550
Place (distribution)	81586	81662	92724	134110	134250	134190
Promotion	77782	77882	16564	132220	132380	132510
Market Report	17579	17584	7939	23100	23110	33120
Market Research	39375	39463	46879	98000	98200	98360
Market Intelligence	16342	16346	17468	12020	12060	12080
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	83166	83134	83192	136340	136470	136570
Inventory	76752	76837	85717	130730	130890	131020
Quality	86533	86513	86555	137640	137750	137930
Cost	19432	19512	19542	136840	136990	137110
Job Report	14466	14460	15429	4313	4314	4313
Industrial Engineering	23125	23148	22756	68290	68320	68410
Manufacturing Intelligence	14349	14343	15316	4084	4084	4083
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	15435	15430	16028	8040	8040	8040
Funds Management	15585	15582	16593	8730	8740	8740
Financial Control	10974	16970	18504	9950	9950	9950
Accounting Report	14835	14828	15199	7290	7300	7300
Internal Audit	8075	8082	18476	15630	15650	15690
Financial Intelligence	14433	14429	15636	4244	4245	4245
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	14804	14798	15878	6640	6650	6650
Administration	74827	74968	84188	132020	132180	132320
Compensation	75005	75107	85348	130140	130300	130440
Government Legislation	15541	15536	16892	7630	7630	7630
Recruiting	78383	78573	90750	285610	286180	286590
Benefits	78744	78829	88364	131520	131660	131790
Safety	85162	85112	45192	130730	130890	131030
Labor Relations	14300	14348	15510	14430	4118	4117
Payroll	62519	62607	73452	138660	138830	139100
Personal Records	15069	15061	16253	7980	7980	7980
Human Resources Research	14712	14706	16007	6670	6680	6680
HR Intelligence	14333	14327	15474	4086	4086	4085

27. Health Service

Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product	2227	2230	20749	11920	11950	11970
Place (distribution)	959338	52612	42269	59090	59100	59160
Promotion	233862	42438	41316	57570	57600	57650
Market Report	5525	6384	6409	20880	20890	20900
Market Research	44369	38713	39949	55660	55700	55770
Market Intelligence	2752	19941	18590	9480	9510	9520
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product	1914886	37510	37746	60940	60940	60960
Inventory	212006	58332	40092	55610	55640	55690
Quality	1770979	39687	39653	61930	61910	62190
Cost	1334838	46349	39564	60800	60820	60860
Job Report	1145	19378	19885	5053	5054	5053
Industrial Engineering	25299	24113	21221	53830	53860	53920
Manufacturing Intelligence	19253	19235	20465	4772	4772	4771
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting	1111	19716	20068	8220	8220	8220
Funds Management	1272	19420	19888	9050	9060	9060
Financial Control	2766	21864	21954	10620	10620	10620
Accounting Report	1604	18421	18613	7470	7480	7480
Internal Audit	6209	6868	15580	13090	13100	13130
Financial Intelligence	18107	19396	21136	4980	4985	4985
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning	11485	20262	21693	7770	7780	7780
Administration	1067335	1067233	37497	56230	56260	56320
Compensation	163237	43319	46346	55260	55290	55350
Government Legislation	1316	20334	21184	8740	8740	8740
Recruiting	75082	74411	37538	54020	54050	54110
Benefits	672016	566158	40381	55740	55750	55880
Safety	565013	48149	38367	54930	54860	55080
Labor Relations	19230	19317	21133	14370	4858	4857
Payroll	66393	58113	41197	56070	56100	56160
Personal Records	1572	18133	19042	7960	7960	7960
Human Resources Research	19393	19724	20318	7680	7690	7690
HR Intelligence	19267	19294	21310	4826	4826	4825

28. Community Service						
Marketing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Marketing Product			12634	9340	9370	9390
Place (distribution)			65313	102040	102090	102220
Promotion			59964	99880	99950	100070
Market Report			7099	22220	22230	22240
Market Research			46040	97760	97960	98120
Market Intelligence			12981	11210	11240	11250
Manufacturing:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Product			55643	103610	103650	103740
Inventory			57882	98270	98340	98460
Quality			56637	105200	105220	105340
Cost			56406	104850	104910	105020
Job Report			11064	2187	2186	2185
Industrial Engineering			21909	68180	68210	68300
Manufacturing Intelligence			11322	2000	1998	1997
Financial:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Financial Forecasting			11904	5680	5680	5680
Funds Management			12441	6570	6580	6580
Financial Control			14216	7690	7690	7690
Accounting Report			11434	4930	4940	4940
Internal Audit			14933	14710	14720	14750
Financial Intelligence			11794	2119	2118	2118
Human Resource:	**2/12/96**	**16/12/96**	**30/12/96**	**13/01/97**	**27/01/97**	**10/2/97**
Personnel Planning			11919	4280	4290	4290
Administration			56314	99780	99850	99980
Compensation			57630	97830	97900	98030
Government Legislation			12783	5360	5360	5360
Recruiting			54313	97100	97170	97300
Benefits			59933	99280	99330	99450
Safety			57367	98500	98570	98700
Labor Relations			11670	12270	1992	1991
Payroll			54045	97730	97800	97930
Personal Records			11730	5860	5860	5860
Human Resources Research			11840	4310	4320	4320
HR Intelligence			11636	1961	1959	1958