HOW MUST CORPORATE AMERICA'S APPROACH TOWARD INFORMATION TECHNOLOGY CHANGE AS WE MOVE INTO THE FUTURE?

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Case Description

As American corporations move into the next century, they need to find new ways of competing on a global level. Information must be available to all people across the enterprise. Corporate strategy and vision must be communicated to everyone. Each employee needs information to make decisions consistent with the vision.

Information technology (IT) is an important factor in the modern corporate structure. The companies that will survive and prosper are the ones that leverage technology to aid in their growth. Much of corporate America has made an investment in IT Much of this investment has been made without a clear strategy that parallels the business vision of the company.

In the pages that follow, we will examine the effects of information technology on corporate structure, decision making, personnel development, and profit margins. We will explore how IT is financed and the inherent problems associated with the current approach. Finally, we will look at a new way of viewing how information technology can enhance the growth potential of corporations.

Throughout the late sixties and early seventies, corporations used information technology to help them deal with large volumes of redundant financial processes. Computers were used as the tools of the accounting department. Initially, accountants completed forms similar to those used in the traditional, manual processes. These

forms were then sent to the Data Processing Department where they were keypunched, processed, and listed on reports that were sent back to the accountants. The accountants would check the listings for accuracy and balance the numbers. At the end of an accounting cycle, this data would be consolidated, rebalanced, and relisted for the accountants to use in the closing cycle. This "Batch" form of data processing, while very labor intensive, greatly increased the efficiency of the corporations' accounting departments. Reports were generated in a more timely manner than before. This allowed the information to be used for more timely decision making. Companies that knew their sales, profit, and inventory positions at the end of a month could more accurately plan their business strategy for the next month. The timeliness of the data made it valuable to the corporation. The efficiency gains and subsequent cost reduction in the accounting department justified the computer hardware and software expenditures.

As the seventies wore on, other facets of the corporate structure began to reap the rewards of automation. The primary output of the data processing department was still paper reports, but now the payroll, purchasing, and production departments of industrial corporations were reaping the benefits of computer generated reports instead of manual ones. By listing open orders and material requirements on a monthly basis, management could better plan the activities of the different disciplines of the

enterprise. The systems were still comprised of batch runs with data keypunched from forms, but the cost of generating the reports was shifted to a few computer professional instead of many accountants, buyers, and production schedulers. Again, the efficiency gains and cost reductions justified the computer expense, but the real value of the systems was in the timeliness of the data they produced.

In the mid to late seventies, on-line systems became more prevalent. Data displayed on computer screens was easier to distribute and less costly than paper. Information was easier to retrieve and enter, but the cost of entry was beginning to shift back to the user departments and out of data processing. This met with some resistance. The accounting department liked the computer generated reports, but they did not want to bear the cost of data entry. This is where timeliness and cost collided. A better, more accurate system could not be justified because it did not directly generate a cost reduction.

American corporations viewed their data processing departments as a way of reducing cost in other departments. The computer system had never been identified as a revenue enhancement tool. All of the accounting and sales data that had been accumulating on tape had not been considered a corporate asset. It was only an efficient way of archiving data, much like microfiche.

Through the eighties, corporate America went through its downsizing phase. Managers became obsessed with

improving their companies' return-on-investment (ROI). ROI
is calculated by dividing profits by assets. The easiest
way to improve a company's return-on-investment is to reduce
its assets (Hamel 8). Some managers took advantage of many
of the efficiencies and consolidation possibilities that the
technological infrastructure allowed them. Technology also
began to downsize. Personal computers began doing the work
of mainframe computers. New desktop tools made the
employees who remained more efficient. Corporate America
was saving money by cutting cost everywhere it could.
Unfortunately, many companies reduced capabilities along
with their cost.   This resulted in a form of corporate
anorexia. Systems and staffs became too small to
effectively compete on a global level. Information
technology had been viewed as a necessary evil for reducing
cost but not as a tool for generating revenue. Much effort
had been spent creating operational functionality in the
computer systems, but little had been invested in creating
new ways of doing things. The computer functions were still
supporting the old manual approach to running the business.
We had automated the functions, but had failed to improve
the processes.

     As competitive pressures were introduced from abroad,
and American companies began to compete more globally, it
became apparent that information was the key to success.
The more information about markets, sales, cost, etc.
available, the better the planning process.

Along with the realization of information's value came the prominence of the corporate information systems personnel. Corporations began to remove the information systems from the control of the accounting department. Many companies created the position of Chief Information Officer to help them uniformly leverage technology across the enterprise. Since the Information Systems (IS) Department serves most aspects of a business, it accumulates a vast amount of knowledge about how a company operates and what the lines of communications are.

Case Solution

Many companies are beginning to rethink the way their Information Technology Departments participate in the enterprise. Corporations are beginning to deploy technology in ways that enhance customer satisfaction. Recent surveys show this change in attitude. In 1992, companies rated cost-reduction as the primary goal of information technology. In 1996, customer satisfaction is rated number one. Anything that enhances the way in which an organization relates to its customers has the potential to enhance revenue.

Most customers do not care how a vendor does its internal processes. Purchasing, scheduling, payroll are all activities that do not directly enhance customer satisfaction. These "generic" activities do not enhance revenue. All companies do them, and they are done in a

similar manner by most organizations. Information
technology departments spend large percentages of their
budgets supporting computer systems that perform these
functions. Contemporary attitudes are changing about this
approach toward IT resource utilization. More money is
being spent on applications that improve quality and
customer service. These "Strategic" systems are being
developed to enhance the company's products and improve its
competitive advantage.

One popular approach used to move in this new direction
is the outsourcing of computer operations. Many
corporations have found that third-parties, such as IBM,
EDS, and Perot Systems can take over the ownership and
operation of large, corporate data centers and run them much
more efficiently than their internal departments can. This
outsourcing liberates capital and human resources to work on
the development of more strategic systems. Here again,
customers do not really care how well a vendor's data center
is run. They simply expect that the infrastructure exists
to serve them well. By redeploying IT resources toward new
technologies that will enhance quality assurance or customer
satisfaction activities, they become potential revenue
enhancers instead of cost savers (Best).

Another approach to resource redeployment is the
practice of purchasing off-the-shelf software. Many
companies spend millions of dollars supporting software that
performs the "generic", internal functions of the business.

These systems are often designed by internal resources and are limited to the experiences and education of the people on the implementation team. Also, they are usually developed around a set of functional requirements that reflect the corporation's needs at given time. They rarely include functionality that anticipates future business requirements or best-practices from other companies or industries. In most cases, these development projects span large stretches of time, over which functional requirements change. These systems are often outdated before they are fully developed. Since these functions are generic, the new functionality required by one company is probably implemented at another. Purchasing software packages allows implementation teams to focus their efforts on mapping a wide range of functionality to corporate needs. These needs can be approached from the standpoint of meeting stated business objectives instead of performing generic activities. Also, with a wider range of experience involved in the development of purchased software, corporations have the benefit of more expertise when developing new processes to utilize the software tools. Additionally, the future enhancement and support of the software is handled by the software vendor. Again, this allows the expertise of the enterprise to be focused on developing systems that enhance product quality and customer satisfaction.

One downside to implementing purchased software is the change that is required throughout the organization. This

change must be carefully managed to insure that the
company's best interest is kept in mind. Individual
reports, computer screen formats, and even core processes
may need to be reengineered to move from the old
manufacturing business model to a customer-centric service
model (Miley 47).

By the way, the by-products of this new approach are
usually our old friends cost-reduction and efficiency.
Initially, management may perceive the cost as being higher
because of implementation expenses and annual maintenance
agreement costs, but these are really costs that are being
diverted from internal cost centers to external vendors.
Let us examine some examples of this approach.

Rockwell International Corporation has deployed
information technology throughout its diverse enterprise.
Rockwell produces everything from space shuttles to axles.
They have made an enormous investment in their IT
infrastructure. This technical foundation includes data
centers and computer networks that make extensive use of the
public internet and their own private intranet. The company
has established technology standards that allow them to
integrate their systems into a cohesive, seamless data
processing and delivery system. One example of how Rockwell
makes this technology work for them is their use of internal
intranets. In the past, employees had to make requests to
the information systems department for special reporting to
allow them to understand the status of production at

machining cells. Today, employees are able to access this information by visiting each cell's web page. This ability gives Rockwell employees the information they need to keep customers informed about the status of their orders and manufacturing groups abreast of production progress and quality information. There is no doubt that these, along with the other benefits of their systems give Rockwell a competitive advantage in every market they compete in (Sutter).

MasterCard captures point-of-sale data for every purchase made with one of its credit cards. Using standard UPC codes and bar-code technology, product, price, location, and timing data can be captured about every purchase a person makes. When this data is combined with information about promotions, a very detailed analysis of marketing strategy and effectiveness is possible (Grim). When this data is combined with personal finance data such as income, debt level, and other demographics, a very detailed profile can be assembled about consumers. This data can be used to target marketing campaigns such as mailings and magazine advertisements. In the future, real-time access to this data could be used to do on-the-spot promotions at the point of sale. Currently, the most common use of this type of information is in the production of mailing lists. Many companies, use this personal profile data to target mailing and telemarketing campaigns. The sale of this information is a major industry in itself. Corporations pay large sums

of money for lists that allow them to precisely target market segments. In most cases, these lists are considered assets. They are very expensive and have a limited useful life. Recent IRS rulings allow these assets to be depreciated the same as computers and other equipment ("Mailing" 308). When a corporation begins to treat its data as an asset, new ways of funding information technology can easily be rationalized. Expenditures for equipment that can be associated with revenue production and customer service are not usually justified on the basis of how much cost they can take out of the business.

Dana Corporation, an automotive component manufacturer, used its information technology department to meet a market need and produce a new product enhancement. Tire-wear is a major problem in the heavy truck industry. Dana, and its customers, were spending hundreds of thousands of dollars per year for tire-wear related warranty expenses. Dana's information and manufacturing technologists worked together to develop a toe-in monitoring system and installed it in their axle manufacturing process. This process allowed Dana to certify the accuracy of their axles' toe-in settings. This certified process is marketed to the trucking industry as a product. This process is patented the same as all of the other products that Dana sells. Although the system did result in a warranty cost reduction, it was justified on the basis of providing a new product for the marketing department to promote (Bushroe).

The Greyhound Bus Company is an example of how a company can leverage the market insight of its information technology people to aid in the financial turnaround of a company. Greyhound management implemented a new reservation process that was inconsistent with the demands of the marketplace. The new process made it difficult for Greyhound customers to make reservations the way they wanted to. Greyhound had changed to a reservation system similar to the Sabre system used by the airlines. Travelers were required to make reservations for travel in advance. This process supported the company's cost-saving initiatives by allowing schedulers to use bus assets more efficiently. Unfortunately, this cost reduction did not enhance revenue. It actually had an adverse effect on sales. With help from the chief information officer, Greyhound abandoned the new process and improved other processes that actually improved customer service. These improvements allowed the bus company to increase its revenue and begin the financial turnaround process (Lentzsch).

Fannie Mae, the nation's largest source of home-mortgage funds, uses electronic-commerce applications to speed mortgage processing and create new products and services. The company plans to introduce forty new applications in the next twelve months. Their IS Department produces computer applications that support the organization's strategies and tactics before those plans are out-of-date. Those development projects that can be

completed in six to nine months are within the company's
business planning horizon (Caldwell 36).

Textron, Incorporated, a $9 billion automotive and
aerospace manufacturer, is working to develop a strategic
approach that supports their IT department's new role
relative to profit-and-loss. "We spent a lot of time this
year shifting our focus to break up spending into two
categories: profit-sustaining and profit-enhancing," says
William Gault, Chief Information Officer. Profit sustaining
initiatives are those that support ongoing operations.
Profit enhancing projects are defined as new money-making
efforts. Profit-enhancer projects expand and contract
relative to their return on investment (Caldwell 49).

General Motors has developed a new option called OnStar
for the 1997 Cadillac. This option combines the global-
positioning satellite system, networked sensors, a cellular
telephone, and a computerized link to customer-support
centers. If the car's airbag inflates, an alert goes out to
a customer-support center which calls the car's cellular
phone. If there is no answer, the support center locates
the car and calls the nearest emergency service location.
This option adds $1,000 to the price of the car plus
additional service fees and cellular charges. This
constitutes additional revenue for GM and a new product for
a marketplace (Caldwell 50).

At United Parcel Service, information technology is the
second largest expenditure. At $1 billion, it is second

only to aircraft. One quarter of the IT budget is spent on customer-oriented development. Another fourth is spent maintaining customer systems. "Information is becoming almost more important to our customer than the package," says Ken Lacy, senior vice president of information systems. UPS now gives customers access to its computer network via the internet. Shippers can log on and track packages online. Mr. Lacy estimates that the UPS icon is being installed on customers' computers at a rate of one hundred per day. UPS is developing a ten-year plan to identify the needs of the marketplace and what technologies the company should invest in to meet those future needs (Caldwell 49).

Levi Strauss and Company is using technology to bring custom-fit jeans to women. Levi's marketing research told them that a good fit was more important to its female customers than speed. The company invested several million dollars in hardware and software to bring this product to market. Customers visit a store with a Personal Pair Kiosk. Sales personnel enter the woman's measurements into the kiosk's database where it is stored and transmitted to computerized cutting machines. There is a three-week wait before the customers get their jeans. The cost of a pair of Custom Fit Jeans it $65, which is comparable to the cost of other designer-label jeans. The kiosks generate one quarter of all women's jean sales in the thirty Levi's stores where they have been installed. Much of this is repeat business. Additional pairs of jeans are easy to order because the

kiosk's computer stores the customer's measurements for future use. The program has been such a success that the Docker line will be added soon and men's jeans will be added by late 1997 (Caldwell 44).

Many top business executives are beginning to recognize the profit potential of information technology. Last April General Electric Corporation named Gary Reiner to the new position of senior vice president and chief information officer. Mr. Reiner is now one of five corporate executives at G.E. and report directly to John Welch, G.E.'s chairman and chief executive officer. This is the first time a CIO has reported to this level at G.E. One of Mr. Reiner's primary goals is to leverage the company's Information Services unit for business growth. He believes that the people responsible for IT should be more business-oriented than technology-oriented (Caldwell 38).

Studies show that customer-oriented strategies are associated with the profitable use of information technology. "Companies that stressed customer service in providing new quality and better features, and leveraged intellectual assets, were companies most likely to have higher profits and productivity," says Erik Brynjolfsson, Professor of Information Technology at MIT's Sloan School Of Management. "Other companies stressed control and reporting from IT, and they were not as profitable." Computer Science Corporation's annual survey of IT issues shows a clear shift in thinking toward intellectual assets. Using IT for a

competitive advantage jumped to number four from thirteen one year earlier. Capitalizing on IT also rose from number fifteen to five (Caldwell 38).

Summary

To compete and succeed in the future, corporations must leverage technology to help themselves improve processes, product quality, and customer service. Standard, integrated enterprise planning systems can give employees the tools they need to efficiently plan and execute the business functions of the company. Data can be entered and verified once and then used by all of the computer applications in real time. Integration can allow efficient management of cash and inventory through events such as mass engineering changes or economic downturns. It can also improve the accuracy of a company's available-to-promise inventory figures. All of this leads to better customer service.

Corporations must begin to look upon their electronic data as an asset. Data about sales, customers, and markets can be used to help identify new products and improve the way existing products are marketed.

Communications technology can be leveraged to combine information resources. Electronic Data Interchange can be used to facilitate electronic commerce. By implementing EDI, order processing can be done around-the-clock with minimal staffing and human error. Customers can do business whenever they want without the constraints of office hours

and time zones. The mail time is eliminated along with postage and paper costs. Confirmations, which verify delivery and price, can be returned electronically. Ship notices can be sent to confirm when the product is actually shipped so that the customer can arrange to use it immediately when it arrives. Electronic invoicing and funds transfer can reduce the accounts receivable portion of a company's inventory-to-cash days. With the complete cycle automated, Just-In-Time concepts can reduce inventory which will free up cash for both the customer and the vendor, as well as improve customer satisfaction. These EDI relationships also bring customers and vendors closer together in more of a partnership, which is harder to replace with a competitor.

The emergence of the internet has redefined electronic commerce. With very little investment, a company can put up a web page and begin advertising on the internet. Information about a company, its products and services, and its investment potential can be posted and accessed by anyone with a computer and modem. Many companies, including Dana, Eaton, and Rockwell have web pages that describe their company to investors. This information also includes financial history. Online catalogs and product information can be disseminated via the web. When changes are made, they take effect immediately instead of waiting for new catalogs and brochures to be printed and distributed. This,

in itself, is a major customer service improvement as well as a cost saver.

Internet security issues are being solved, and commerce is now possible on the web. Customers can enter orders and then check the status of those orders online. In this way, companies can extend their information technology to their customers in real time. The systems become an external as well as an internal tool of business. Many of the popular business software packages are releasing web-enabled screens as part of their packages. As these off-the-shelf solutions become more available, the cost will continue to drop and internet usage will become more common-place in the business world. Again, all of this adds up to customer satisfaction, higher sales, lower cost, and increased profits.

As customers send business data, and vendors accumulate data to support the business process, large banks of data can be assembled to aid in the marketing, customer support, and product development process. Credit information, purchasing patterns, payment history, and warranty returns can be put together to create a detailed profile of a customer. Payment terms can be adjusted based on a customer's sales volumes and accounts receivable cash days. Customer promotions can be offered to give discounts on volume purchases that allow the vendor to receive even larger discounts from suppliers. Extended warranties can be offered to customers who purchase preventative maintenance contracts. Retail customers can be targeted for mailings,

special sales, and regional promotions based on buying habits and product preferences. Electronic inquiries through the internet can be logged to target electronic mail promotions. Computers attached to phones with the Caller-ID function can record the source of telephone inquires, telephone catalog sales, and even pizza delivery orders. All of this information can be used to target telemarketing efforts for everything from clothing to dinner. The more you know about your customers the more you can offer them.

Intranets (internal, private internets) are an excellent tool for distributing information across an enterprise. Employees can log into servers for information on orders, production, or even internal data such as employee handbooks.
The more people who have access to data, the more return on the intellectual investment. Intranets make data acquisition affordable because access can be gained by low-power client computers using inexpensive browser software. Efficiency is enhanced because the data changes only once and is then available to the entire population, depending on security. This is much less costly than the reprinting and distribution of reports or manuals.

All companies can benefit from electronic mail. It is the conduit that creates a seamless information technology platform. The E-Mail package used should have internet mail capabilities as well as the ability to handle attachments. The internet capability gives a company the ability to send

and receive message to customers and vendors. The attachment capability allows files to be attached to each message. Spreadsheets, word-processing documents, presentations, graphics, CAD drawings, software, or any other type of file can be attached to a message and sent to the recipient. The recipient can then use the data with his or her spreadsheet or other software, assuming it is compatible. Staying with mainstream or market-leading software packages increases the odds of compatibility. This is the difference between sharing data and sending reports. This technology gives most average users the ability to interface with others, in a very high-tech way, by sharing common data.

All of the advantages described in this report are not possible without some level of information technology standardization. IT professionals are required to study and implement hardware and software standards that are adhered to by everyone. The more standard the systems are, the less expensive they are in terms of support, training, and downtime. The first standard that must be set is that of the desktop. Common hardware, networks, and desktop word processing, spreadsheet, database, and graphics software are a must. Any data created by an employee is the property of the company. That data should be available to all who need it. This is only possible if all computer users have the same software. Companies should stop referring to micro computers as personal computers. Workstation is a more

accurate descriptive name for the hardware. The second most important standard is the computer network. Single-location enterprises need a common local area network. Multi-location companies need wide area networks to connect the local ones. These networks allow data to move and to be shared to get the maximum benefit. The third standard component is electronic mail. Common mail systems allow employees to easily move data inside and outside the enterprise. The common desktop software allows the data to be used once it reaches its destination.

Additional standards for business systems such as financial, manufacturing, shop floor, payroll, and other functions allow for a common look and feel for screens and reports throughout the enterprise. It also facilitates common procedures and enforces business process standards. Relational database technology allows for integrated functionality between departments and locations as well as easy consolidation of multiple entities within the business. Employees that are trained at one location can easily be moved to another location without massive retraining on everything from the order entry screens to the word processing and spreadsheet software.

The marriage of these technologies can create a 'Cybercorp' in which employees can communicate and share information globally. This allows all of a company's expertise and information to come to bear on any competitive

situation. It facilitates round-the-clock response regardless of geography or time zone (Brown 20).

By managing information technology standards and justifying IT projects on the basis of customer service, quality, and revenue enhancement returns, companies can leverage their technical investments toward growth instead of merely cost reduction. By focusing on growth and market needs, technology can be matched to the task and result in a major competitive advantage for a company.

Works Cited

Best, Jim. "Managing Your Outsourcing Relationship." Diss. Information Week 500 Conference, 1996.

Brown, Tom. "Are You Ready For 'Cybercorp'?" Management Review November 1996: 20-21.

Bushroe, Joseph R., Personal Interview. 4 November, 1996.

Caldwell, Bruce. "We Are The Business." Information Week 28 October 1996: 36-50.

Grim, Anne. "Knowledge Management: The Importance Of The Data Warehouse In A Client-Server Environment." Diss. Information Week 500 Conference, 1996.

Hamel, Gary, and C.K. Prahalad. Competing For The Future. Boston: Harvard Business School Press, 1994.

Lentzsch, Craig, and Brad Harslem, Sr. "IT Support Of The Market-Driven Organization: The CEO/CIO Interaction." Diss. Information Week 500 Conference, 1996.

"Mailing List Depreciation Allowed." Facts On File 29 April 1993: 308.

Miley, Michael. "Survival Of The Fittest" Profit November 1996: 43-53.

Sutter, James. "Electronic Commerce: The Internet And Your Business - Reality vs. Myth." Diss. Information Week 500 Conference, 1996.