

## **Information Technology and the Re-engineering of Business Organization for Technological Advancement: Implication for Human Resource Management**

**Adaeze Chike-Okoli and Gambari, A. I.**  
**Department of General Studies,**  
**Department of Science Education,**  
**Federal University of Technology, Minna, Nigeria**  
**E-mail: [gambari@futminna.edu.ng](mailto:gambari@futminna.edu.ng)**

### **Abstract**

*The information revolution has brought about the digital age which is one of the determinants of the efficiency of an organization in attaining the cooperate objectives. Reengineering of business organizations is a strategic move to organizational change, which implies greater emphasis on appraisal and redesign of the entire business architecture while information technology is the science of extracting, collating, storing, processing, utilizing and disseminating data. The problem of this study was the assessment of recent trend in information technology business organizations and management. Many managers, entrepreneurs and school administrators are not computer literate and cannot assess information in the systems. The purpose was to provide data for efficiency and effectiveness to managers of organizations. For instance, it is observed in this paper that teleconferencing or computer conferencing reduces travel time and expenses by enabling managers in distant spots to talk (face-face) over television link ups. This has helped to keep cost low while increasing profit. The implication for human resource management is that human labor is the major source of wealth creation, thus training and development of human resource through education is the central core of any genuine personal, technological, educational, social and economic advancement that has a hope of sustainability. It is recommended that training and re-training of human resources must be a continuous priority in achieving technological advancement.*

### **Introduction**

The information revolution has brought about the digital age, which is one of the determinants of the efficiency of an organization in attaining the corporate objectives. Three general developments can be identified to be largely responsible for information revolution from the Industrial age to the information age, as a result of numerous developments in electronics and the information needs of our economic institutions like business and Industry. These are: the information explosion, the high-tech revolution in general, and the computer in particular. Re-engineering of business organizations is a strategic move to organizational change, which implies greater emphasis on appraisal and redesign of the entire business architecture. According to Okpara (2004), it is a radical shift in which the business is re-invented and brought on the path of high productivity and profitability. Today, business organizations are re-engineering their operations in order to meet the challenges posed by information technology and to utilize the opportunities they present to remain relevant in the market place, as the computerization

of basic business transaction is bringing us closer to popular fantasies of the “paperless office” and the “cashless society”.

Information technology is the science of extracting, collating, storing, processing, utilizing and disseminating data. In the modern industrial environment such technology involves the use of data processor facsimile machines, high-speed modern printing machines, computer software, high-resolution monitors and various storage facilities (ICAN, 1987).

Re-engineering brings about change in an organization as a norm (culture and tradition) rather than as an aberration. It is a radical transformation in which the business is reinvented and brought on the path of profitability and stakeholders' satisfaction. Hence the acquisition and utilization of information technology remains a sine qua non for survival, growth and development in the new business order. This is because management needs information generated by the computer and other systems necessary to make decisions and to perform its major functions of planning, organizing, staffing, directing, controlling, etc.

### **Business Re-engineering**

In recent years much attention has been focused on an approach to greater efficiency, known as “Business Process Re-Engineering”. The term “Re-engineering was first applied to business in a seminal work by Hammer and Champy (1993). They observed that it is vital, under modern conditions of customer expectations, intense competition and the pervasive nature of change, to move away from the familiar attention to tasks and structure in order to focus on business processes. Processes here stand as a “collection of activities that takes one or more kinds of input and creates an output that is of value to the customer.

Re-engineering and its implications:

#### **a. Structure and Human Behaviour**

Hammer and Champy (1993) identified a number of important changes that are likely to occur in structural forms and human behavior in the workplace as a result of reengineering. These include the following.

- i. Work structures move away from functional departments towards process teams.
- ii. Jobs change from being a collection of simple tasks to a multi-dimensional range of tasks.
- iii. There will be willingness and ability to accept greater responsibility for work outcomes.
- iv. Preparation would change from training directed at the 'how' of the job to greater emphasis on education.
- v. The focus for performance and payment shifts from activities to results expressed in terms of the value created for the customer.
- vi. Advancement within the organization is more likely to be based on the ability to undertake the-work rather than on performance in the current job -the emphasis is on change rather than on rewards.
- vii. There will be a culture change in which the typical employee will see the customer as more important than the boss.

- viii. Organizational structures are likely to become flatter and less hierarchical.
- ix. Senior executives assume the role of culture leaders rather than financial score-keepers (Okpara, 2004: 113).

#### **b. Work**

According to Hammer and Champy (1993) the re-engineering process tends to lead to the following changes in the way work is undertaken:

- i. Jobs/tasks become combined into related jobs/tasks.
- ii. Workers become more involved in decision-making.
- iii. The various steps in a process being performed in accordance with the needs of the next process rather than in some predetermined linear form.
- iv. Processes having several versions to deal with different customer requirements.
- v. Work is performed where it makes most sense
- vi. A reduction in the number of checks and controls insisted on during the process.
- vii. The minimization of reconciliation of orders between customers and suppliers.
- viii. A single person as point of contact with the customer - empowered customer service representatives.
- ix. Hybrid centralized/decentralized operations prevail where the centralized operation is often in the form of a shared database.

From the above, one can perceive the role of information technology in the reengineering of business organizations is crucial. Information technology can facilitate the efficiency and effectiveness in the operations of the organization. This will in turn open up other uses of IT to enable new goals to be achieved and new systems to be discovered. Hammer and Champy (1993) thus stated that information technology enables the re-engineering process to fulfill its primary goals of introducing radical change, since the main purpose of re-engineering is innovation rather than automation. Re-engineering reinforces and reinvigorates modern information technology as fulcrum of efficiency and effectiveness in business organizations. The introduction of modern information technology such as the personal computer, fax machine, E-mail, internet and the digital mobile phone, have demonstrated high potentials (Talwar, 1994).

### **Recent Trend in Information Technology In Business Organizations and Management**

Some of the recent information technology that has revolutionized business organizations includes the following:

#### **Electronic Mail**

Since communication is a key factor to the success and efficiency of an organization, electronic mail plays a vital role in communication between persons, that is transmitted and received via computers. With an electronic mail system, messages are sent electronically from one person to another by placing them in a special computer storage area. This ensures that delivery is instantaneous and messages cannot be easily lost. With either a mainframe or minicomputer, information can be input on one terminal and almost instantly output on another. However, if immediate output is not desired, the information can be stored on an auxiliary storage device and accessed later

by the receiving party via a terminal.

### **Electronic Banking**

Automatic terminals now make it possible for bank customers to withdraw cash at any time of night or day if only they insert the proper card and push the right button on electronic machines. If funds move instantaneously through electronics, then there is no float and this changes the effectiveness of the use of cash assets. The maturity of electronic information handling will surely affect existing commercial banks greatly. As electronic signals replace checks, withdrawal slips, deposit forms, mortgage or loan payment receipts and such, banking customers need never show up at the bank for more transactions.

### **Electronic Data Interchange (EDI)**

EDI is a direct computer-to-computer exchange of standard business transaction documents, such as invoices, bills of lading, and purchase orders, between two separate organizations. EDI differs from electronic mail in that it transmits an actual transaction, as opposed to a primary text message, and features standardized transaction formats, content-related error checking, and actual processing of the information. EDI saves money and time because transactions can be electronically transmitted, eliminating the printing and handling of a paper at one end and the inputting of data at the other.

### **Internet**

The Internet is a network that connects computers around the world using a standardized set of procedures called Transmission Control Protocol/internet Protocol. Networks have already changed the way people communicate. Each day, millions of transactions zip across tens of thousands of high speed connection among computers spread all over the world. The number of networks linked to the internet now is in excess of 45,000 with approximately five million host computers connected to these networks. The internet is growing by roughly 10 per cent a month. It is the largest international association of people and machines yet invented and it is growing every day.

The internet allows for a simultaneous conversation via typing on the keyboard and the messages will be simultaneously displayed on the screen. This is very useful intending direct messages and important information as well as answers (Associated Business Information, 1987). Some of the internet tools include E-mail, file Transfer Protocol internet Relay chat (IRC). Gopher and the World Wide Web (www) which offers a dynamic way to present information, letting users view text and graphics. On the web, a customer simply clicks a few buttons and all the information about the business come to life. Through the web you can give customers access to a wealth of information.

### **Electronic Commerce**

Electronic commerce is the buying of goods and services electronically through the internet. It is shifting the balance of commerce power to the buyer. If you sell gift items, electronic commerce enable web-site to significantly expand an enterprise, reach customers far beyond the physical location and if this is done in other languages, revenue will be increased by catching the world wide prospects. Also customers can make orders by phone, E-mail and even internet. Companies can also market their products on-line.

### **Telecomputing**

It allows workers to stay at home with a personal computer terminal connected to the office computer and let the data and information do the travelling.

### **Teleconferencing**

With teleconferencing, people can have conferences by going to a local teleconferencing center that has voice, video and audio systems. Pictures, sound and computer results are sent from one teleconferencing center to another. The pictures, sound, data, and information travel to the people instead of the other way round.

### **Voice Storage and Forwarding**

With voice storage and forwarding, one can leave, get and store verbal messages for or from other people around the world. One can connect to data bases. With data communication, transaction processing becomes very easy and effective.

### **Automated Teller Machines (ATMs)**

The ATM is an interactive device that allows customers to access a bank's computer and complete transactions like cash withdrawals, without direct human intervention. ATM is un-manned terminal which can handle withdrawals, deposits, fund transfers and other teller functions automatically. ATM saves customers time. It is very accurate and fast in performing teller function. It enables customers to make enquiries about his or her account from any bank. It makes banking system operation more efficient. It reduces paper documents transactions.

### **Networking**

This is a method of connecting more than one computer together in order for them to share information, usually from the data bank. The best application of this technology is to banking industry whereby a customer who has an account in Lagos and he needs funds for his business in Abuja. With the network system in operation, the customer's account can be easily accessed from the data bank.

### **Business Organizations and Information Technology**

The introduction of information technology has significantly affected the mode of operations in business organizations.

First, availability of and access to accurate, up-to-date and timely information promote effective management. Through the use of the internet, electronic newsletters, documents, programs, searchable databases and online experts are available in large numbers than ever before and they have positively impacted on business and made it more worthwhile and efficient.

The use of word processors results in very worthwhile savings in terms of efficiency, time and manpower skills. This goes a long way towards the realization of goals and objectives at an accelerated pace.

Information technology increases business efficiency in the provision of services and greater responsiveness to consumer needs.

Information technology helps eliminate the paper-dominated office and contribute to greater productivity and efficiency of office personnel.

It enables managers to make decision by combining information developed within their companies with outside data bases, including economic and industry statistics. This allows them to assemble studies of market, competition, pricing and forecasts in hours rather than months.

Furthermore, electronic mail allows reports, memos, and other correspondence to be transmitted simultaneously to many people within the company as well as outside of it. New systems can turn reams of numbers into charts and colourful graphs. Information can thus be more quickly digested for quick decisions.

Computerized scheduling systems make it possible to set dates for large meetings without consulting executives individually. Teleconferencing or computer conferencing reduces travel time and expenses by enabling managers in distant spots to talk “face-to-face” over television link ups. This has helped to keep cost low while increasing profit (Eromosele & Ahmed 1999).

Today, firms are reducing their ranks of middle managers and staff experts, which are almost being wiped away as a result of information technology. This puts the full burden of operational decision-making on online managers and making those managers fully responsible for the success of their operation. This shift of responsibility also forces the decision makers to rely more and more on information delivery directly from operational source without first being filtered through squads of staff advisors, for the information revolution now provides the means to make the information available (Landon & Landon, 1999).

The advent of desk-top, laptop, palmtops, note book computers and many others and its ability to retrieve needed information from many diverse sources, promises a huge rise in productivity of decision makers.

Effective communication has enabled more global corporate management control. Organizations can hold meetings with people who have never met face-to-face or create ad hoc groups of colleagues for working at a distance.

Information technology like the internet has been able to assist companies to search for successful practices of corporate and product improvement. In some cases, this-search is part of a total quality management plan as it has-been a way of finding new solutions to business problems.

An awareness of the current state of affairs in any industry has helped give a company a competitive advantage, access to information about products, new ideas and the current status quo which is invaluable (Hammer & Champy 1994).

Generally, information technology like the internet, E-commerce, etc has helped businesses to participate in online marketing and sales of products and services. By observing internet activities and participating in discussions, companies have created or can create a sharper marketing focus for themselves than before as they can carry out marketing research online and they can create and support actual sales distribution channels.

It is pertinent, however, to observe that the introduction of information technology has been of mixed blessings or fortunes to individuals and businesses. Some of the negative impacts of the information technology revolution are computer crime, abuse of privacy and reduction of employees, under-utilization and unemployment.

### **Implications for Human Resource Management**

Human labour is the major source of wealth creation thus; the nurturing training development of human resources through education is the central core of any genuine personal, educational, social and economic development that has a hope of sustainability (Chike-Okoli, 2006). This is because capital and natural resources are passive agents of development. It is the human resources that are the active agent that accumulates the capital, exploits the natural resources and builds the social, economic, educational and political organizations for national development.

It is pertinent however, to note that the modern information technology does not exist outside man. It is still the human resource who invents such technologies that enhance efficiency and effectiveness. It is usually the case of “garbage-in-garbage out”. The productivity of a particular technology depends majorly on the ability, skill and information available to the programmers. The access to the use of such technologies also depends largely on how educated or enlightened the users are. If the managers of organizations and their subordinates are not trained or well informed on the utilization of technology for productivity, of what use then will the technology be?

Many managers, entrepreneurs, school administrators are not computer literate and cannot access the information available in the systems. There is therefore need for training, re-training and continuous development of both leaders and the followers. It takes the human resource to utilize available information for re-engineering purposes. By such training, business organizations can remain relevant in the market place and are able to meet the challenges posed by information technology.

The acquisition and utilization of information technology by stakeholders remains a sine qua non for survival, growth and development in the new business order. This is because leadership/management needs information generated by the systems to make decision and to perform its major functions of planning, organizing, staffing directing, controlling etc. Adequate training in the use of internet and computer services will enhance leadership efficiency and effectiveness.

A well-equipped human resource in terms of information and communication technology (ICT) will translate goals and objectives of organizations into reality ensuring increased productivity, reduction of costs and increased benefits.

### **Conclusion**

The impacts of the information technologies are enormous-greater efficiency, high quality products, better services, convenience of operation etc. Surviving the test of local and international competition and thriving in a global economy are tough challenges for any company. As companies increasingly covert their workforce and priorities from basic production of goods to provision of services, the role of communication increases in importance. Modern information technology as a reengineering tool has reduced drastically cost of production and improved relations with their customers as seen in the banking sector. Modern information technology strengthens the management information systems for enhanced efficiency and effectiveness.

The benefits of the introduction of modern information technology in business organizations as re-engineering strategy is largely derived from thinking, organizing and acting horizontally that is, in terms of cross-functional processes rather than vertically in

terms of specialist functions and departments. The human resource however, remains the most important resource in technological development and advancement.

### **Recommendation**

The removal of the strict restriction put on the use of very small Aperture Terminal (USAT) should be implemented, to permit individual internet service providers (ISP) to install and use it to increase their bandwidth and boost internet service delivery, as USAT offers a reasonable high bandwidth at a reduced cost. Efforts should be increased in embracing Information Technology as a re-engineering strategy that will bring about business revolution in Nigeria. Radical improvement results from challenging assumptions, breaking down barriers, innovative use of technology introducing new ways of working, changing relationships and re-drawing traditional boundaries. What is sought could be a longer-term increase in capability and competitiveness. Training and Retraining of human resource must be a continuous priority in achieving technological advancement.

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